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LEGAL MEDICINE

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By

GILBERT H. STEWART
Of the Columbus, Ohio, Bar

Late Professor of Medical Jurisprudence
in the Starling Medical College

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LEGAL MEDICINE.

CHAPTER I.

LEGAL MEDICINE—MEDICAL WITNESS.

§ 1. Definition.	§ 4. Importance of subject.
2. Historical.	5. Some discoveries.
3. Progress in study and application of principles.	6. Duty of witness.

§ 1. Definition.—Dr. James S. Stringham, who was the first public teacher of legal medicine in this country and who lectured on the subject at Columbia College in 1804, defined “Medical Jurisprudence as that science which applies the principles and practice of the different branches of medicine to the elucidation of doubtful questions in courts of justice.”

These questions are properly embraced in five different classes:

First: The relations of the sexes to each other as considered with reference to impotence and sterility; hermaphroditism, rape, pregnancy, legitimacy and delivery.

Second: Injuries inflicted upon the living organism; as infanticide, wounds, poisons and cases of persons found dead.

Third: Disqualifying diseases which embrace the different forms of mental alienation.

Fourth: Feigned diseases and other deceptive practices.

The *fifth* class embraces all other possible questions among which may be mentioned medical evidence, age, identity, presumption of survivorship, life insurance, etc.

Another authority has said:¹ “Medical jurisprudence, or, as it is sometimes named, legal or forensic medicine, is the science that teaches the application of medicine to the purposes of the

¹ Prof. Reese, 1 Med. Leg. Jour. 539.

law. The grand object of the law is the discovery of truth. In order to attain this object it lays under contribution every department of knowledge—medicine among the rest. A superficial observer is surprised to discover the intimate relationship subsisting between the two sciences, medicine and law. How many doubtful questions are solved in a court of justice solely by medical jurisprudence? Think only of the numerous cases of sudden death occurring under suspicious circumstances; of persons found dead; of real or alleged insanity; of personal identity; of infanticide and criminal abortion, and numerous other cases depending for their final settlement mainly, if not exclusively, upon medical testimony. In fact, every branch of medicine may be summoned to contribute its quota as occasion may arise. Thus, is it a trial for murder in which the proof of the crime is closely connected with certain marks of violence discovered on the dead body? At once the skill of the anatomist and surgeon, as also that of the pathologist, comes into requisition. Is it a trial for criminal abortion, infanticide or rape? Here immediately the knowledge of the obstetrician becomes indispensable. Is it a trial for poisoning? Here the skill and experience of the chemist and toxicologist, and it may be, the botanist, will become absolutely necessary. And when the case is one involving the complex questions of insanity—as in determining the validity of a will, or the criminal responsibility of a homicide—who can give the required information, or enlighten the court and jury save he who has mastered the complex and subtle study of the mental and psychological functions?"

§ 2. Historical.—It is very evident that to some extent the study of this science has engaged the attention of mankind from the earliest times, for we find in the most ancient law books mention of principles and practices falling distinctly within its limits. But they were then only looked upon as principles, and it was not considered essential in courts of justice to call upon physicians to testify upon questions and subjects falling within their especial province. To Germany belongs the honor of enacting the first law, which provided for the examination of medical witnesses. In 1532, during the reign of the Emperor Charles V, a law was

passed which provided that in every case where death had been occasioned by violent means such as child murder, poisoning, hanging, drowning, the procuring of abortion, and the like, the opinion of medical men should be formally taken. From that time to the present more and more importance has been given to medical evidence, and the range of subjects in regard to which such evidence is sought, has been extended until the medical witness is now relied upon for "the means of detecting and punishing fraud and violence; of preventing unmerited infamy and death; of saving the widow and orphan from ruin; of vindicating virgin purity and innocence; of restoring conjugal harmony and happiness; of obviating unjust and oppressive demands upon the services of their fellow man; and of removing to a great extent the sources of public misery in epidemic diseases."

§ 3. Progress in study and application of principles.—Like all other sciences, the study of medical jurisprudence and its application to the affairs of man, has grown more rapidly and improved faster since the opening of the 19th century than in all previous time. In the English House of Commons in 1807, during a public debate called forth by the appointment of Dr. Andrew Duncan, Jr., as professor of Medical Jurisprudence in one of the universities, a member said that he "did not understand what the duties of such a professor were or what was meant by the science which he professed."

In 1867 so great progress had been made that the "Medico Legal Society" of the city and state of New York was organized to carry out the principle that a lawyer could not be fully equipped either for the prosecution or for the defense of an individual indicted for the crime of homicide, without some knowledge of anatomy or pathology, and that no physician or surgeon could give absolute satisfaction as an expert witness, without some knowledge of law.²

This was the first society in the world organized for this purpose, but there are now many such societies in this country and in Europe.

² 3 Med. Leg. Jour. 388.

§ 4. **Importance of subject.**—Do not suppose that it is only to the physician who has been long years in practice that a knowledge of this science is essential, and therefore that the young physician may put off the study of it until he gets into active practice. One of the first cases to which he may be called may be a case of gunshot wound, or of dangerous injury from some other cause, or of the administration of poison. If there are any suspicious circumstances connected with the case, or if it should terminate fatally, his profession and his position require him to go into all the circumstances of the case. Were these injuries or this poisoning homicidal, suicidal or accidental? If death results from a pistol or rifle ball, from what direction did it come, and how great a distance did it travel before reaching the victim? Do not suppose that the cultivation of a habit of minute observation in such cases is incompatible with the highest professional character. Sir Astley Cooper (than whom none stood higher as a surgeon), during his years of practice cultivated this habit constantly; and such were his powers of observation that on one occasion, when he was summoned to attend a man who had been shot with a pistol ball, he was enabled to point out the murderer, by a close examination of the direction of the ball, and the position of the injured man relatively thereto, which satisfied him that the weapon had been fired by a left-handed person.

If it is a case of poisoning, did the death result from poison, and if so what kind of poison? or was the death the result of some latent disease?

A lifeless body is found in the water. Is this a case of accident, suicide, or was a murder first committed and then the body thrown into the water, in order to elude suspicion? Many questions of this sort confront the physician in his daily experience; and unless he has added to his knowledge of medicine an understanding of the principles of law as applied to medicine he will find himself in an unpleasant position when he is called upon to testify as a medical witness.

Or suppose a young physician is called to a case of dislocation. Notwithstanding the best of care, either owing to some defect in the patient's constitution, or some of the many other contingencies over which the physician can have no control, the patient is

attacked with erysipelas; after a dangerous illness, the patient slowly recovers, but, with a stiffened joint. Then follows a suit for malpractice and sometimes a ruinous verdict. Ruinous not only financially, but professionally. The injustice of this is apparent but the remedy is not obvious. One effectual mode of relief is to elevate the standard of medico-legal knowledge in the professions of both medicine and law. Let the physician fully understand his legal rights and the physician and lawyer educate themselves in the principles and practice of medical jurisprudence.

§ 5. Some discoveries.—A study of this subject brings to light many strange things, and many wonderful discoveries made through the researches of the medico-legal student; as an example:

M. Meguin has discovered and proved that the date of death can be ascertained by studying the generations of acarina or mites, which have been at work upon the body. Each species may be determined with precision, by a careful study of the debris, of the envelopes of larvae and carapace or shells among the dust that covers the tissues of the body.

M. Brourdel, an eminent French toxicologist, brought the attention of the French Academy of Medicine to this subject by producing the mummified cadaver of a girl of 22 discovered in a cellar under a heap of straw, and showing by this same process that it must have lain there nearly a year. The condition of the body was due to the dryness of the soil, but the most interesting fact disclosed was that five different species of acarina were traced by this scientist, their order of succession, the duration of each species, and the work performed by each. One species consumes the fatty acids, another absorbs the fluids, and when one has finished its labor it dies on the body, or is devoured by its successor.

The period of life for each successive species being, in summer time, from six weeks to two months, M. Meguin, in a murder case, established with precision the date of burial, of human remains discovered in a garden. In obscure cases of homicide where doubt exists as to the period of death, this accurate and

purely scientific test may be of great value in determining with precision dates which will throw much light upon the crime and in many cases perhaps lead to the detection of the perpetrator.³

§ 6. Duty of witness.—All medico-legal questions require special preparation, in order that the witness may be fitted to investigate properly and testify in regard thereto intelligently.

In such investigation slight nothing, for frequently what seem to be unimportant details have turned out to be of vital importance, and the guilty have escaped merited punishment by reason of the slipshod manner or conduct of the medical witness. Never think that the duty is perfunctory; the witness should be interested in what he is doing, for if his thoughts are elsewhere than on his work, his body had better accompany his thoughts. It is as much his duty to be interested in a medico-legal investigation, as it is of a good citizen to be interested in whatever is for the good of the community. When his work is done he should arrange and systematize it, so that it will be available, whenever he or the state needs it.

The medical witness should not fix as his standard newspaper notoriety or popular applause, pleasant as both of them are, but let his standard be the discovery of the truth. The truth will never injure the innocent, and, so far as he is concerned, it will punish the guilty.

The expert should always remember that although his opinions may be perfectly correct, the statement of facts in the hypothetical question propounded to him by counsel may have been proven not to exist. For this he is not at all responsible.

To take high rank as a medico-legal expert requires a thorough practical knowledge of the profession, keen eyes to observe and an impartial mind to reflect and decide upon the facts in each case.

³ 4 Med. Leg. Jour. 149.

CHAPTER II.

MEDICAL EVIDENCE—PRIVILEGED COMMUNICATION.

§ 7. Evidence—Medical evidence.	§ 11. Statements to attending physician — Declarations in rape cases.
8. Kinds of evidence.	12. Dying declarations.
9. Medical jurists.	13. Photographs,—X-Ray.
10. Expressions of pain.	14. Privileged communications.

§ 7. Evidence—Medical evidence.—The “doubtful questions,” in courts of justice, must be elucidated by means of legal evidence; and in order to properly assist in the administration of justice, it is essential to become, to some extent, familiar with the general rules of evidence, so as to know *how* and *what* to observe in all cases likely to be investigated by the legal tribunals.

Evidence is the means by which any alleged matter of fact, the truth of which is submitted to investigation, is established or disproved, or it is that which tends to influence the belief respecting it. Belief is produced by the consideration of something presented to the mind. The matter thus presented, in whatever shape it may come and through whatever material organ it is derived, is evidence.

Medical evidence is the testimony given by physicians or surgeons in their professional capacity, either as experts, or from personal observation; or derived from the statements of writers of medical or surgical works.

None but mathematical truth is susceptible of the high degree of evidence which excludes all possibility of error, called demonstration. Matters of fact are proven by that kind of evidence not obtained either from intuition or by demonstration, which is called moral evidence. It would be absurd in the ordinary affairs of life to require demonstrative evidence, and it is therefore only required that such matters should be so proven, that there can be no reasonable doubt about them.

§ 8. **Kinds of evidence.**—Although the word evidence includes all matters presented to the mind inducing belief or disbelief, there are various classes of evidence, as follows:

Competent evidence is that which the very nature of the fact to be proven requires as the fit and appropriate proof in the particular case.

Satisfactory evidence is such as would so convince a reasonable man that, in matters of the highest importance to his own interests, he would not hesitate to act upon the conviction.

Cumulative evidence is evidence of the same kind to the same point.

Hearsay evidence is the evidence, not of what the witness knows himself, but of what he has heard from others. Thus the testimony of the plaintiff that his attending surgeon had said to him "that the operation was a dangerous one" is hearsay evidence and therefore inadmissible.

Hearsay evidence is regarded as incompetent because it does not derive its value solely from the credit to be given to the witness on the stand, but depends also in part upon the veracity and competency of some other person not under oath. It sometimes happens, however, that the very point in issue is whether certain things were spoken or written by a third person and not whether they were true. In such cases evidence in regard thereto is not considered as hearsay, but as a statement of original facts. As, for instance, on a question of sanity, letters and conversations addressed to a person, being connected in evidence with some act done, may be proven to show sanity or insanity. So also the representations of a sick person as to the nature symptoms and effects of the malady from which he is suffering, especially if made to his physician, may be proven as original and competent evidence.¹

In all trials of fact, the evidence adduced is, in its nature, direct, presumptive or circumstantial.

Direct evidence shows the existence of the fact without proof of any intervening fact.

¹ Alabama, &c., R. Co. v. Arnold, 84 Ala. 159, 2 So. 337, 5 Am. Rep. 354.

Presumptive evidence is divided into two subdivisions:

a. Presumptions of law which arise where the rules of law direct an inference to be drawn from the proof of the existence of a particular fact.

These may be conclusive or inconclusive, for example: The records of a court, in any collateral proceeding, are conclusive evidence of the truth of what is stated therein.

The law presumes a man sane or innocent until the contrary is shown, and there are other presumptions of law.

b. Presumptions of fact are merely natural presumptions, such as appear by common experience to result from the particular circumstances of any case; being the conclusions drawn by the mind from the circumstantial evidence in the case.

Circumstantial evidence tends to prove a disputed fact, by proof of other facts which legitimately tend, from the laws of nature, the usual connection of things, the ordinary ways of doing things, etc., to lead the mind to believe that the fact exists which is sought to be established.

Although there may be cases in which no distinction can be noted between presumptive and circumstantial evidence, presumptive evidence is not necessarily circumstantial evidence, but may be the result of an arbitrary rule; as the presumption of death after an absence of seven years without being heard from.

The distinction between direct and circumstantial evidence may perhaps be made plainer by an illustration: If A should testify that he saw B with a knife in his hand stab C, this would be direct evidence. But if D should testify that he met B running away, a short distance from where C was lying on the ground, and that he found sticking in a wound in C's body a knife which he had shortly before seen in B's possession, this would be circumstantial evidence.

It has very frequently been observed that circumstantial evidence is more trustworthy than direct; for while witnesses may invent occurrences and testify to things which did not occur, they are not able, generally, to invent a train of circumstances pointing inevitably to a certain result. This is well illustrated by the following quotation from an opinion by Chief Justice

Gibson, of Pennsylvania. He said: “Circumstantial evidence is, in the *abstract*, nearly, though perhaps not altogether, as strong as direct evidence; in the *concrete* it may be infinitely stronger. Indeed it is questionable whether there is such a thing as evidence purely direct. You see a man discharge a gun at another; you see the flash, you hear the report; you see the person fall a corpse, and you *infer*, from all these circumstances, that there was a ball discharged from the gun, which entered his body and caused his death, *because* such is the usual and natural effect from such a cause. But you did not see the ball leave the gun, pass through the air and enter the body of the slain; and even such testimony of an eye witness to the fact of the killing is therefore only inferential, or, in other words, circumstantial. In cases of death from concussion of the brain caused by a blow, it has sometimes been thought by physicians, from appearances at the post mortem, that apoplexy might have been the cause of death after all. The only difference really between direct and circumstantial evidence is, that the former is more immediate, and has fewer links in the chain of connection between the premise and conclusion; there *may* be perjury in both. No human testimony is superior to doubt. But it is not on that account to be wholly rejected.”²

The circumstances testified to by the different witnesses should be strong, and should each tend to throw light upon the other; and the result of the whole should be to leave no doubt that the offense has been committed and that the accused and no one else committed it.³ And such evidence must consist of facts and not of conjectures or hearsay.

In civil cases it is sufficient if the evidence on the whole agrees with and supports the hypothesis, which it is adduced to prove, but in criminal cases it must exclude every other hypothesis, but that of the guilt of the accused.

§ 9. Medical jurists.—Most writers on medical evidence say that the testimony of the medical witness is strictly that of an

² Commonwealth v. Harman, 4 Pa. St. 269.

³ McKinney v. Grand St., &c., R. Co., 104 N. Y. 352, 10 N. E. 544; Schoolcraft v. People, 117 Ill. 271, 7 N. E. 649.

expert; and so it may be when strictly examined, but it may very properly be regarded in two aspects:

First. As ocular evidence, which includes evidence relating to such cases as those in which a physician is called to visit a wounded patient, and is afterward required to testify as to the nature and character of his wound, and as to his post-mortem examination as to the cause of death; or when he is called upon to testify as to the mental condition or capacity of one whom he has attended as a physician.

Second. As expert evidence, which includes evidence relating to such cases as those in which a physician is required to give his testimony based upon a hypothetical statement of facts propounded to him in the court room; or when he is called upon to testify as to the mental or physical condition of a person he is called to see for that especial purpose.

The duties of the medical jurist are quite distinct from those of the mere physician or surgeon. While the latter looks only to the treatment of disease or accident, and the saving of life, the object of the former in a large proportion of cases, is to aid the law in discovering the perpetrator of a crime, or in rescuing an innocent person from an unjust charge. For instance, a physician is summoned to attend a person laboring under the effects of a fatal poison criminally administered, but at the time he may have no suspicion of the fact. In spite of treatment, death ensues. Here the functions of the practitioner cease, while those of the medical witness begin. It is utterly impossible for him now to escape giving evidence or to shift the responsibility upon another. The law will insist upon his appearance, first at the coroner's inquest and afterwards at the trial of the accused. As a regularly licensed practitioner, it must be assumed that he is fully competent to answer every question put to him in the court room relative to the general properties and effects of poisons, the quantity of each required to destroy life, the time within which they prove fatal, the results of the post-mortem examination, etc. Then, if the claim is made, that the death was caused by disease, and not by poison, the searching inquiry will be as to what diseases resemble poisons in their symptoms, effects, and post-mor-

tem characteristics; and lastly, as to the liability to fallacy in the chemical processes employed to detect poison. To observe well is one of the highest attainments in the medical art; but it is pre-eminently important to the medical jurist. Whenever he is summoned to a case, let him observe carefully and accurately *everything* around him, even to the minutest circumstance.

In the case of a man dying by violence or poison the physician likely to be called upon to testify in regard to the occurrence should insist on being allowed to make a thorough examination; and in making such an examination it will be best for him to call to his assistance one or more other physicians, not only that his own testimony may be corroborated, but also that he may have the assistance of the discernment and observation of other experts.

§ 10. Expressions of pain.—In a suit to recover for personal injuries it is competent to show that after the injury the plaintiff manifested pain by shrieks and screams.⁴ An attending physician having had every means of observing all the symptoms, and examining the patient, may testify whether he is feigning symptoms and whether he suffered pain.⁵ But statements of plaintiff in respect to the pain which he suffers, made to a physician who examined him for the sole purpose of testifying as an expert on his behalf at the trial, are not competent.⁶

§ 11. Statements to attending physician—Declarations of complainant in rape cases.—A physician may testify as to statements or expressions of existing pain made to him even after suit brought.⁷ And a wife may testify as to exclamations of pain uttered by her husband while confined to his bed by injuries.⁸ And

⁴ *Hagenlocher v. Coney Island, &c., R. Co.*, 99 N. Y. 136, 1 N. E. 536.

⁵ *Chicago, &c., R. Co. v. Martin*, 112 Ill. 16, 1 N. E. 111.

⁶ *Wheeler v. Tyler, &c., R. Co.*, 91 Tex. 356, 43 S. W. 876, affirming, 41 S. W. 517.

⁷ *Cleveland, &c., R. Co. v. Newell*, 104 Ind. 264, 3 N. E. 836, 54 Am. R. 312.

⁸ *Commonwealth v. Jardine*, 143 Mass. 567, 10 N. E. 250.

it is proper to show how often a physician visited a patient as tending to show the severity of the injury.⁹ It may be laid down as a general rule that "whenever the bodily or mental feelings of an individual are material to be proved, the usual expressions of such feelings made at the time in question are original evidence."¹⁰ But the testimony must be confined to manifestations of a seemingly involuntary nature and indicative of bodily suffering, and evidence of statements of the injured party as to his feelings are not competent.¹¹ In some states such declarations made to any person are held to be competent, but the weight of authority and the better reason makes such declarations made to the attending physician of the most value.

In prosecutions for rape it is material and competent to show that the prosecuting witness made complaint of the injury immediately.

The declarations of a patient to his physician as to the cause of the injury are competent evidence. Such statements are part of the description of the wound. In an action for loss under a policy against death by accident a statement made by a decedent to his physician, upon which the physician forms his opinion and makes a prescription, is competent evidence to prove what was the actual cause of his illness and death, although the symptoms are such as might be produced either by disease or by the accident.¹² In this case the insured became suddenly sick, and to his physician attributed his sickness to an injury to his back and side by a fall received when no one was present. The learned judge who decided the case said: "I am satisfied that there is a tendency in the decisions of the present time to enlarge the range of such testimony, especially when it is necessary to avoid a failure of justice. The statement of the history of his case, made to his physician by the patient, who is seeking relief from pain and severe sickness, are entitled to credit. To state untruly to his doctor the cause

⁹ *Fleming v. Shenandoah*, 67 Iowa 505, 25 N. W. 752, 56 Am. R. 354.

¹⁰ *Squires v. Chillicothe*, 89 Mo. 226, 1 S. W. 23.

¹¹ *Roche v. Brooklyn, &c., R. Co.*, 105 N. Y. 294, 11 N. E. 630, 59 Am. R. 506.

¹² *Dabbert v. Travelers', &c., Ins. Co.*, 2 C. S. C. 98 (Ohio).

of the sickness would be directly against his most vital interest in saving his health and life. In such case the absence of a statement by the patient of such a cause of his sickness would be an important element in forming the physician's opinion. For, if a patient did not refer to such an accident as the cause of his sickness, the doctor would necessarily conclude that the symptoms did not come from such a cause."

§ 12. Dying declarations.—In order to make, what are commonly called Dying Declarations competent, those declarations must be made after all hope of recovery is gone, and at a time when the wounded man *knows that he cannot recover*. If he is actually dying, but *he* does not know it, his declarations, or accounts of the crime, are worthless as evidence. And this is necessary because such declarations are received against all the ordinary rules of evidence, as they are not made under oath, and not generally in the presence of the accused. They are received, however, because it is supposed that with the knowledge of impending death and its speedy approach, every man will speak the truth, and that statements made in that dread presence are more reliable than any formality of an oath could make them. Hence the *imperative* rule of law that the victim *must know* that his recovery is hopeless. Such declarations are in general only admitted in evidence in cases of homicide where the death of the victim is the subject of investigation and the circumstances of the death are the subject of the declarations,¹³ but in some of the states it has been held that they are competent in prosecutions for committing abortion, if such declarations are made competent by statute¹⁴ or if causing death is a material part of the offense.¹⁵ And wherever it appears that the dying person was not possessed of the religious sense of his accountability to his Maker, and the deep impression that he is soon to render to Him a final account, whether from infidelity, imbecility, or ten-

¹³ *Rex v. Mead*, 2 B. & C. 605; *State v. Harper*, 35 Ohio St. 78, 35 Am. R. 596.

¹⁴ *Commonwealth v. Thompson*, 159 Mass. 56, 33 N. E. 1111.

¹⁵ *Montgomery v. State*, 80 Ind. 338; *State v. Dickinson*, 41 Wis. 299.

der age, the declarations are inadmissible. It is sufficient to render such declarations admissible as evidence if the declarant made them under a belief of imminent death, although those around him did not believe him dying and in fact death did not ensue for some time,¹⁶ and they must be as to facts and not opinions.¹⁷ Dying declarations are admissible only as to facts which the deceased would have been competent to testify to as a witness if living, and a statement made by a dying person that he knew he had been poisoned by defendant, because defendant had given him a drink of whiskey which tasted nasty and because he was taken sick shortly afterwards, is a statement of an opinion, and inadmissible.¹⁸ Sometimes very nice distinctions are made by the courts as to what declarations are or are not admissible. Thus in Missouri it was held that "the exclamation of the deceased, 'Oh, hun, he has killed me,' taken in connection with the nature of the wound, and the short time which elapsed after he was shot before his death, would show that it was said under a sense of impending death;" but the exclamation, "He has shot me," does not show a statement "under a sense of impending death."¹⁹ Where a surgeon told the patient that she might die at any moment and that there was but one chance from a contemplated operation, and the patient said she did not expect to recover, but would like to, her statements were held not admissible, as it did not appear that she had given up all hopes of life.²⁰ The fact that the deceased was able at the time the declarations were made to get out of bed, go to the window and explain the situation and go back to bed without assistance, should not exclude the declarations. The exhibition of such physical strength and energy is not inconsistent with a knowledge of impending death.²¹ To this general rule that dying declarations must be as to facts and not opinions at least one court has made an exception, deciding that the declarations of

¹⁶ *People v. Simpson*, 48 Mich. 474, 12 N. W. 662.

¹⁷ *State v. Clemons*, 51 Iowa 274, 1 N. W. 546.

¹⁸ *Berry v. State*, 63 Ark. 382, 38 S. W. 1038.

¹⁹ *State v. Rider*, 90 Mo. 54, 1 S. W. 825.

²⁰ *Peak v. State*, 50 N. J. Law 179, 12 Atl. 701, 11 Cent. 354.

²¹ *Jones v. State*, 71 Ind. 66.

the mere opinion of the deceased are admissible when they are favorable to the accused and explain the conduct or motives of the deceased.²² It is proper to admit in evidence, on a trial for murder, the dying declaration of the deceased when in answer to the question, "What reason, if any, had the man for shooting you?" he said, "Not any that I know of. He said he would shoot my damned heart out," as the answer is not the expression of an opinion, but is the statement of a conclusion of fact from observed facts.²³

Dying Declarations may be contradicted by proof of previous contradictory statements made by deceased.²⁴

The question whether a declaration of the deceased person was made under a sense of impending death, so as to be admissible as a dying declaration, is a preliminary question for the judge to decide. The examination of a witness upon such a question should be confined to the facts relating to the declarant's condition of body and mind at the time of the declaration.²⁵ Notwithstanding the declarations may be made after the deceased has been informed that his wound was necessarily fatal, yet they are not admissible, unless it is also shown that they were made with the impression upon the mind of declarant of "almost immediate dissolution."²⁶ But it is not necessary that each witness testifying to a dying declaration shall also by his testimony definitely fix the belief of the declarant; the sense of impending death may be shown by one witness, and the declaration by another.²⁷

Great caution is necessary not only in the admission but in the use of what are known as dying declarations. The acts often occur under circumstances of confusion and surprise, calculated to prevent accurate observation; the consequences of the violence may occasion an injury to the mind, and an indistinctness of memory as to the transaction; the deceased may have stated his

²² Haney v. Commonwealth, 5 Ky. Law Rep. 203.

²³ Boyle v. State, 97 Ind. 322, 20 Amer. L. Rev. 468.

²⁴ State v. Lodge, 9 Hous. (Del.) 542, 33 Atl. 312.

²⁵ People v. Smith, 104 N. Y. 491, 10 N. E. 873, 58 Am. R. 537n.

²⁶ State v. Partlow, 90 Mo. 608, 14 S. W. 14, 59 Am. R. 31.

²⁷ People v. Garcia, 63 Cal. 19.

conclusions, which may be wrong; thus a statement in a dying declaration that defendant "waylaid" the deceased is not admissible, being a mere opinion;²⁸ he may have omitted important particulars; he may give a partial account; or his passions may not have subsided; he is not subject to cross-examination and such declarations have great weight with juries. While the question of their admissibility is for the trial judge,²⁹ at the same time it is very important that the attending physician should observe the condition of the patient so that he may aid by his testimony in the right decision of this preliminary question.

§ 13. Photographs—X-Ray.—It has frequently been held that a witness may testify as to a person's identity from the sight of his photograph,³⁰ also as to location, surroundings and condition of premises;³¹ i. e., a sketch showing locality of blood stains in a building, may be admissible in evidence.³² A photograph is only a pictured description of what the witness has seen and therefore has always been held admissible,³³ if the fact is relevant. The witness need not be the maker of it; he is only called upon to say whether or not it is a correct representation of what he has seen.³⁴ In the case of X-Ray photographs only the operator can testify to their correctness.

As the magnifying lens and the spectroscope may be used in the production of evidence, so also may the photograph taken

²⁸ State v. Parker, 96 Mo. 382, 9 S. W. 728.

²⁹ Mitchell v. State, 71 Ga. 128.

Dying declarations are subject to discredit and impeachment by any competent evidence. Evidence that deceased did not believe in a Supreme Being is competent to discredit his dying declarations but not to render them inadmissible. Gambrell v. State, 46 So. 138, 17 L. R. A. (N. S.) 291.

³⁰ Marion v. State, 20 Neb. 233, 240, 29 N. W. 911, 57 Am. R. 825.

³¹ Commonwealth v. Fielding, 184 Mass. 484, 69 N. E. 216.

³² People v. Johnson, 140 N. Y. 350, 35 N. E. 604.

³³ Durst v. Masters, L. R. 1 P. D. 373, 378; Turner v. Boston, &c., R. Co., 158 Mass. 261, 265, 33 N. E. 520.

³⁴ Archer v. New York, &c., R. Co., 106 N. Y. 589, 603, 13 N. E. 318.

by the X or Roentgen-Ray.³⁵ The process and instrument of observation and the operator being testified to as capable and trustworthy, such photographs are receivable like any other photograph.³⁶

It must be remembered in this connection that X-Ray photographs, like other photographs, may be so manipulated by the operator as to produce distorted and untrustworthy pictures, and therefore it is important that the operator should be an impartial person intent only on obtaining a truthful and exact reproduction of that which is to be presented to the court or jury.

§ 14. Privileged communications.—While the testimony of physicians in courts of justice is thus important and the oath which they take is that they will testify “the truth, the whole truth, and nothing but the truth,” the law has seen fit to put a seal upon their lips in certain cases so that they are not allowed, except under certain conditions, to give evidence in regard to what in law are called Privileged Communications.

By this term is meant such communications as are made to physicians by their patients in the course of their professional attendance. It is impressed upon physicians from the commencement of their medical studies, that *all* communications made to them by their patients are sacred, and must forever remain locked up within their breasts. But in any state which does not have a statute upon the subject making such communications privileged, a physician may be *compelled* in court to testify as to any communication made to him by his patient however confidential. In some states it is provided by statute that a physician shall not testify concerning a communication made to him by his patient in that relation or concerning his advice to his patient; sometimes this provision is modified by allowing the physician to testify by express consent of his patient or by his waiver of the privilege, and also if the patient voluntarily testifies the physician may be *compelled* to testify on

³⁵ DeForge v. New York, &c., R. Co., 178 Mass. 59, 59 N. E. 669, 86 Am. St. 464.

³⁶ Carlson v. Benton, 66 Neb. 486, 92 N. W. 600.

the same subject. This latter provision that the physician may be compelled to testify if the patient voluntarily testifies, has been held not to be applicable in criminal cases.³⁷ But while some states have shown a desire to protect such communications by the foregoing and similar provisions, it has been uniformly held by the courts that such statutes have no application where the communication is for the purpose of obtaining information whereby a crime may be committed or concealed. Under a statute of New York which provided as follows: "No person duly authorized to practice physic or surgery shall be allowed to disclose any information which he may have acquired in attending a patient in a professional character and which information was necessary to enable him to prescribe for such patient as a physician, or do any act for him as a surgeon," it was decided that when a physician was consulted by the defendant in an action for seduction as to the means of producing an abortion, he could not claim the protection of the statute, as the information was not essential to a proper prescription.³⁸ And certainly this was a righteous judgment, for laws are not made for the protection of murderers or those who would attempt murder, and it is the purpose of the law as it is of all reputable physicians to prevent the commission of this crime. And it has also been rightly held that "communications from one physician to another, made to secure the aid of the latter in the commission of an abortion, are not privileged."³⁹ But this rule only applies where the communication is made or information obtained with a view to commit a crime. If, after a crime has been committed and the accused arrested, a physician attends the patient professionally, her communications to him are privileged, and where, as in New York, *information* obtained by the physician is also privileged, he will not be allowed to give his opinion as to whether an abortion has been committed.⁴⁰ Wherever a statute prohibits a phy-

³⁷ Duttenhofer v. State, 34 Ohio St. 91.

³⁸ Hewitt v. Prime, 21 Wend. (N. Y.) 79; Pierson v. People, 79 N. Y. 424.

³⁹ State v. Smith, 99 Iowa 26, 68 N. W. 428, 61 Am. St. 219.

⁴⁰ People v. Murphy, 101 N. Y. 126, 4 N. E. 326, 54 Am. R. 661;

sician from testifying as to *information* obtained while in professional attendance upon a patient, he will not be allowed to testify to information obtained by him of a confidential nature, or to *any* information obtained by him while so attending a patient; he cannot in case of the contest of a will testify as to the condition or appearance of the testator, or his capacity for transacting the business in hand, unless where it has been held that calling upon a physician to witness his will is a waiver of the privilege;^{40a} and it is immaterial whether he was called in attendance by the patient or his attending physician.⁴¹ Under such a statute in New York it was held in a trial for murder that “where the physician had for several months preceding the trial been jail physician, and while he had looked after all the jail prisoners in a general way, and examined and kept the accused under his observation, he had never prescribed for nor professionally attended him,” it was not error “to permit him to answer a hypothetical question as to defendant’s sanity, from which question was excluded all knowledge which witness had of defendant personally, and which was based entirely upon facts occurring before defendant came to the jail.”⁴² Nor can a physician disclose a privileged communication made in his presence to his partner.⁴³ Such statutes are, however, the patient’s privilege, and he may waive the same and does waive it when he calls upon the physician to testify as to such information or communication.⁴⁴ Under such circumstances the physician may be compelled to disclose the same as if there was no such statute.

In an action by a husband for damages for an injury to his wife it has been decided that the husband and wife may waive

^{40a} Mullin, *In re*, 110 Cal. 252, 42 Pac. 645; Coleman, *In re*, 111 N. Y. 220, 19 N. E. 71; Alberti v. New York, &c., R. Co., 118 N. Y. 77, 85, 23 N. E. 35, 6 L. R. A. 765.

⁴¹ Grattan v. Metropolitan, &c., Ins. Co., 80 N. Y. 281, 36 Am. R. 611; Reinhart v. Dennin, 103 N. Y. 573, 9 N. E. 320, 57 Am. R. 770; Masonic Mut. Ben. Assn. v. Beck, 77 Ind. 203, 40 Am. R. 295.

⁴² People v. Schuyler, 106 N. Y. 298, 12 N. E. 783.

⁴³ Raymond v. Burlington, &c., R. Co., 65 Iowa 152, 19 Amer. L. Rev. 151.

⁴⁴ Carrington v. St. Louis, 89 Mo. 208, 1 S. W. 240, 58 Am. R. 108, 21 Amer. L. Rev. 168.

the statutory privilege.⁴⁵ Where the patient has introduced upon the trial the testimony of his physician as to matters which are privileged by statute, the ban of secrecy being thus removed by the patient and the information lawfully made public, he cannot upon a subsequent trial insist upon the privilege when the testimony is sought to be introduced by the other side.⁴⁶ Although it has been held in some states that an executor or administrator or an heir may waive this privilege⁴⁷ wherever the statute requires the "express consent" of the patient to the waiver, upon the death of the patient no one is authorized to waive the privilege.⁴⁸

Under Subdivision 4 of Section 1881 of the Code of Civil Procedure of California, which provides that "a licensed physician or surgeon cannot, without the consent of his patient, be examined in a civil action as to any information acquired in attending the patient which was necessary to enable him to prescribe or act for the patient," it was held that the personal representative, *i. e.*, administrator, of a deceased patient cannot waive the privilege.

This was an action for personal injuries resulting in death, and one of the defendants sent a physician to make an examination of deceased after the accident and also an autopsy on the body of one for whose death an action was brought, and it was held this was not privileged (under this provision of the Civil Code) as information acquired in attending the patient which was necessary to enable the physician to prescribe or act for the patient. In passing upon this point the court said: "A dead man is not a 'patient' capable of sustaining the relation of confidence towards his physician which is the foundation of the rule given in the statute, but is a mere piece of senseless clay, which

⁴⁵ *Blair v. Chicago, &c., R. Co.*, 89 Mo. 334, 1 S. W. 367, 58 Am. R. 111n.

⁴⁶ *McKinney v. Grand St., &c., R. Co.*, 104 N. Y. 352, 10 N. E. 544.

⁴⁷ *Fraser v. Jennison*, 42 Mich. 206; *Blair v. Chicago, &c., R. Co.*, 89 Mo. 334, 1 S. W. 367; *Masonic Mut. Ben. Assn. v. Beck*, 77 Ind. 203, 40 Am. R. 296.

⁴⁸ *Westover v. Aetna Life Ins. Co.*, 99 N. Y. 56, 1 N. E. 104, 52 Am. R. 1n.

has passed beyond the reach of human prescription, medical or otherwise. Moreover, the deceased in his lifetime had not been a patient of this physician.⁴⁹ Some states also have a statute making communications from client to lawyer privileged, and it has been decided that where such communications were made to one *as a lawyer*, although he had not been admitted to the bar, but had practiced before justices of the peace for many years, had been in fact what is termed a *pettifogger*, they were privileged.⁵⁰ By analogy, therefore, it would follow that communications made to one who represented himself as a physician, by a patient, would be privileged. In an action in the Federal Courts a state statute as to privileged communication will be followed.⁵¹

A physician called by a stranger to furnish aid to one who has attempted suicide, and who is compelled to render his services against the will and opposition of the patient, is held to be within the provisions of the statute prohibiting a physician from testifying to facts learned while attending a patient in a professional capacity.⁵²

The words “privileged communications” are also used in another sense. In actions of libel or slander a defendant may plead that his words were privileged; that is, that they were spoken or written *bona fide* upon some subject-matter in which the party communicating has an interest, or in reference to which he has a duty, and spoken or written to a person having a corresponding interest or duty, and if this is true he will not be liable in damages, although otherwise the words would be slanderous.⁵³ Where a physician upon an examination of an unmarried female patient found, as he believed, that she was pregnant, his communication of that fact to others than those reasonably entitled to the information is not a privileged communication, and if it is false, he is liable in damages, notwithstanding he believed his

⁴⁹ *Harrison v. Sutter St. R. Co.*, 116 Cal. 156, 47 Pac. 1019, 1022.

⁵⁰ *Benedict v. State*, 44 Ohio St. 679, 11 N. E. 125.

⁵¹ *Connecticut, &c., Ins. Co. v. Union Trust Co.*, 112 U. S. 250, 5 Sup. Ct. 119.

⁵² *Meyer v. Supreme Lodge K. P.*, 178 N. Y. 63, 70 N. E. 111, 64 L. R. A. 839.

⁵³ *Bouvier's Law Dict.*, “Privileged Communications.”

statement to be true; but his belief on the subject may be considered in mitigation of the damages;⁵⁴ and it has been held that where a physician was employed to determine whether a young man was afflicted with a venereal disease and mistakenly reported that he was, and the result of his report was the breaking of an engagement of marriage, the physician was liable in damages, the court holding that the physician's duty of exercising ordinary diligence, care and skill in a professional undertaking extended to a case where only information was sought; and that the breaking of an engagement was not too remote to sustain the action.⁵⁵

⁵⁴ Alpin v. Morton, 21 Ohio St. 536.

⁵⁵ Harriott v. Plimpton, 166 Mass. 585, 44 N. E. 992, 44 Cent. L. Jour. 60.

CHAPTER III.

EXPERT EVIDENCE.

§ 15. Physician's memoranda.	§ 20. Qualification of experts.
16. Medical witnesses.	21. Objections to expert evi-
17. Expert evidence.	dence.
18. Non-expert witnesses.	22. Value of expert evidence.
19. Distinction between expert and non-expert witnesses.	23. Medical books.
	24. Improvement of expert evi-
	dence.

§ 15. Memoranda.—In cases falling under what is denominated ocular evidence there are generally two stages:

First. When the physician is called to attend the patient.

Second. When he gives his testimony in a court of justice. Whatever is said in this book on the subjects of anatomy, surgery, surgical appliances, drugs and medicines will be said for the sole purpose of assisting in some small degree to cultivate the habit of close observation, when a physician is called to see a patient whose injuries or death may be investigated in the courts; to advise him as to his rights and duties as a physician; to direct his attention to those things which it is most needful for him to observe in such cases and impress upon his mind the particular points upon which he is most likely to be examined in a court of justice.

It is recognized in all courts that mental impressions are fleeting, and hence witnesses are, under certain circumstances, allowed to refresh their memories from memoranda made by them. It is therefore important to cultivate the habit of making memoranda of all that is seen and heard in such cases. These memoranda are not to be used in the place of memory, for a witness who has no recollection outside of the memoranda cannot testify to the facts therein set forth.¹ The witness must swear to the facts from

¹ *Watts v. Sawyer*, 55 N. H. 38.

memory, for it is his recollection and not the memorandum which is evidence. This is simply for the purpose of refreshing the memory. The memoranda are never received as independent evidence; thus the memorandum of a physician of the condition of an injured patient, although made in case of an injury to the wife at the request of the husband, after the physician had been attending her for some time, is not admissible in evidence, even if the physician had testified to the material facts therein and also testified that it correctly stated her condition at the time.² They can only be used as reminders and as collateral proof of the witness's memory. It therefore follows that the witness cannot read from them.³ When the memorandum is produced and thus used, it should be submitted to counsel upon the opposite side, in order that they may cross-examine the witness in regard to what it contains, when and where made, etc., but counsel cannot ask questions except in regard to what appears in the memorandum.⁴ The original memoranda should be preserved as the only ones proper to be used upon the trial, and on every account, including the reason that a cross-examination may be made thereon, they should be carefully and correctly made; and the witness should be very careful that his testimony at the trial does not contradict his memoranda or *vice versa*. Although no precise rule as to the *exact* time when the memoranda should be made is established, yet it is well settled that they should be made at or very near the time of the happening of the event, and also that the greater the length of time intervening between the happening of the event and the making of the memoranda the greater the suspicion that the memory of the witness might have become weakened as to the details of the event. While it is better that the memoranda should be written by the witness, it is sufficient if made at the proper time by his dictation.

In the examination in such cases the witness is called upon to testify as an ordinary witness, and his testimony should be con-

² V. & M. R. Co. v. O'Brien, 119 U. S. 99, 7 Sup. Ct. 118, 21 A. L. Rev. 168.

³ Bonnet v. Glattfeldt, 120 Ill. 166, 11 N. E. 250.

⁴ State v. Mathews, 88 Mo. 121, 4 W. 429.

fined to a statement of the facts within his personal knowledge and observation; his opinions are inadmissible. While this is so, it is also proper that while or after testifying to the facts he may be examined as a medical expert, but the two are separate and distinct, and the witness should carefully observe the distinction.

Although I have termed this kind of evidence "ocular," it is in the main presumptive or circumstantial. In this it does not differ from evidence given by witnesses other than medical men, and this should not be any serious objection to its weight or importance. Circumstantial evidence may be more convincing than positive evidence, and is less likely to be manufactured for the occasion. In the trial of Dr. Webster for the murder of Dr. Parkman the skill of the dentist and the anatomist, brought to bear upon the mutilated remains of a jawbone found in the ashes of a fireplace, convinced the jury that Dr. Parkman had been murdered and Dr. Webster was hanged as his murderer.⁵

§ 16. Medical witnesses.—The weight given to the testimony of a witness is not altogether dependent upon his integrity and veracity. Very much of its force rests upon the intelligence of the witness and his ability to combine existing facts, which, when combined, lead the mind by a stern and inflexible chain of logical sequences to a necessary result, to which the mind *must* give its credence. Professor Guy has very appropriately said that "as witnesses in courts of law medical men have duties to perform for which the ordinary practice of the profession affords no adequate preparation, and, until of late years, medical education no proper training, and medical literature no sufficient guidance." And it cannot be too frequently impressed upon their minds that a man may be a most capable and proficient physician or surgeon and yet make a very poor medical witness.

Much of the difficulty experienced by physicians in giving their testimony in courts of law arises from the fact that they do not properly prepare themselves for the occasion. The lawyers on both sides of the case have been for weeks,

⁵ Commonwealth v. Webster, 5 Cushing. (Mass.) 295, 52 Am. Dec. 711.

and it may be months, delving into the best medical and surgical books treating of the subject under investigation, whether it be insanity, disease, wounds or poisons, for the purpose of obtaining all possible light thereon; besides, they have consulted with their friends among the physicians as to the relative value of this or that medical authority; how this theory has been exploded and that one verified; of similar cases met with in practice, etc. All the information thus obtained they have at their tongues' ends. Then, too, they have thoroughly examined their legal text books, and the reported cases; and in every direction and from all sources of knowledge they have gleaned information. To pass the ordeal of examination and cross-examination at the hands of lawyers thus prepared the physician comes, most frequently, with little special investigation and without any memoranda of the investigation he has made. Until he has been upon the witness stand a few times he apparently imagines that he will be allowed to tell his story to the jury, as he would deliver a lecture to a class of students, without interruption or contradiction. Or as if the court and lawyers were patients who would accept his statements as true and be satisfied that he knew it all. Before he has been asked half a dozen questions on cross-examination he is in exactly the condition of the country lad, who, having put his steer in the pasture, concluded to fasten the chain to a log lying in the field to prevent the steer jumping the fence. When he got the chain around the log, he discovered he had no pin to slip in the link to hold it fast; so, rather than let it slip, he used his forefinger for a pin until he could find something else that would answer the purpose. Telling his experience to the physician who came to see how much of the finger could be saved, he said: "The steer hadn't taken over a couple of jumps before I saw my mistake." So the doctor discovers that he is not on such an easy road; that his ignorance of the laws of evidence causes him serious embarrassment; that the lawyers are not medical students or patients; and that his want of formal and necessary preparation will, if he is wise, lead him to say, with the distinguished anatomist and surgeon, Dr. John Hunter, that "he regrets that he has not made more experiments and more diligent research on the sub-

ject before giving an opinion in a court of justice." Thus, being vexed at himself, it is very easy to get angry with the cross-examining lawyer. Having lost control of himself, which is the inevitable result of losing one's temper when on the witness stand, he gets mixed in his statements and destroys all the force and effect of his evidence; and instead of doing good he does great harm, not only to the case on trial, but to every other medical witness.

It is undoubtedly true that the knowledge acquired and displayed by the lawyers in such cases is as a rule very superficial, and, if the positions could be reversed, and the physician become the examiner, might appear marvelously small. However, the physician is not cross-examined by those who are friendly to the opinions he has expressed, but those whose purpose and object are either to contradict his testimony or else confuse and irritate him, and thus break its force; or, what is still more fatal to it, to lead him to express doubts about what he has been positive about on his examination in chief. This is what lawyers' clients expect them to do, and what the physicians summoned on the other side hope *they* may do and they frequently supply the lawyers with the weapons to accomplish this result. If the witness would escape this humiliation he should be always calm and collected and make ample preparation for the trial. Let him be sure of his knowledge, and not be afraid to say he "does not know," if that is the fact, bearing in mind, on the other hand, that if he does not know a thing which he *ought* to know his confession of ignorance will detract much from the weight of his evidence.

When upon the witness stand let him remember that he is not without friends and defenders in the court room; the attorneys who have subpoenaed him and the judge on the bench will protect him from insult and improper questioning, and if the lawyer who is cross-examining the witness finds he cannot embarrass him, he will very soon excuse him and rely not on the weakness or contradictions of the testimony of this witness, but on the strength of the testimony of his own medical witnesses.

Another mistake often committed by medical witnesses is the attempt to appear learned. It is related of Benjamin Butler

that in the progress of a trial, soon after the execution of Dr. Webster, he was in his usual style harrying and browbeating a witness on the other side, when the witness, with great dignity, said, "Mr. Butler, I am a professor at Harvard College." "Oh, yes," quickly answered Mr. Butler, "I know; we hung one of you the other day." Some professional men who are not influenced by any such desire, make use of terms and words which are beyond the comprehension of ordinary men. One of the most ludicrous instances of this which may be quoted as an example and as a warning to those who are likely to make this mistake, is that of a surgeon called to testify on a trial for an assault, who said that he found "the prosecutor suffering from a severe contusion of the integuments under the left orbit, with great extravasation of blood and ecchymosis in the surrounding cellular tissue, which was in a tumefied state." This would appear to be a very alarming condition for a man to be in, and his death might be momentarily expected by one who did not understand that all this meant was that he had a black eye. Tell what you have to tell in plain English such as non-professional men may understand; your testimony is given for the benefit of the jury, who are usually very sensitive, and when they hear a physician using the ordinary language of his profession in describing wounds, conditions or diseases, are very apt to reject all his evidence, because they cannot understand part of it. For that reason, if no other, use ordinary language in giving your testimony; call the different parts of the body by the names they are generally known by; if you wish to say in describing a post-mortem examination that you turned back the scalp and exposed the skull, how much better to say so, rather than to say that you reflected back the integuments and exposed the calvaria; and speak of diseases in the same way. By so doing you will secure the attention of the jury and fix your testimony in their minds.

Another point in regard to which the witness must be careful is not to draw conclusions from the facts he presents, unless called for, and not then unless such conclusions are capable of verification; and to always bear in mind the uncertainties of the results of all human accidents, and the impossibility of foretell-

ing a sure result from any known cause, or, knowing a result, to surely give the cause. Learned and deservedly famous as were the physicians and surgeons in attendance upon President Garfield, what a serious, and well-nigh inexcusable, error they would have committed if they had attempted before his death to describe the course of the bullet that took his life.

As an illustration of what is sometimes attempted in the trial of a criminal case, a prosecuting attorney attempted to get a surgeon to testify that a bullet entering a man's head at a certain angle could only have done so by reason of the pistol being discharged when the parties occupied a certain stated position, that position being the one in which the prosecutor claimed the parties did stand, the defense denying it. The surgeon declined to so testify, and very properly; he said that so far from such a result necessarily following from such a situation and condition, the bullet might not undertake the direction it did in this particular case once in twenty times.

The manner also of a witness goes far to inspire confidence or distrust in his testimony. He should not proceed in an equivocal, halting manner, but use affirmative terms or his testimony will not receive that degree of credit which it will if he coolly, firmly and candidly, without any real or apparent prejudice or hesitation, states distinctly what he knows and upon what his knowledge is founded. If his manner upon the witness stand is open and free from that peculiar restraint and nervousness which is often the attendant of an honest witness and usually is supposed to characterize the interested or dishonest witness, and if he can give a clear and complete reason for his statements, then he will be believed. If, on the other hand, he is overexact or very loose in his statements, reluctant or unable to give a good reason for what he says, he will be distrusted and discredited.

A witness cannot disclose in court matter which is indecent or offensive to public morals, or detrimental to the feelings or interests of third persons, who are not parties to the suit, if the same is not materially useful to prove the matter in issue. Such matters are largely within the discretion of the trial judge. Neither can a witness be compelled to disclose that which will criminate himself. At one time a witness was privileged from

answering any questions the answers to which might disgrace or degrade him, but it is now almost universally held that no such privilege exists except when the question relates to collateral facts, and then only applies to facts directly involving disgrace, and not to such as only tend to indirectly disgrace.

"A witness cannot avoid answering any question by the mere statement that the answer would tend to incriminate him, without regard to whether the statement is reasonable or not. On the contrary, it is for the judge before whom the question arises to decide whether an answer thereto may reasonably have a tendency to criminate the witness, or to furnish proof of an element or link in the chain of evidence necessary to convict him of a crime.

"Where from the evidence and the nature of the question the court can definitely determine that the question, if answered in a particular way, will form a link in the chain of evidence to establish the commission of a crime by the witness, the court cannot inquire whether the witness claimed his privilege in good faith or otherwise. It is only where the criminating effect of the question is doubtful that the witness's motive may be considered, for in such case his bad faith would tend to show that his answer would not subject him to any danger."⁶

As a general thing the witness must *know* and not simply *believe* the facts to which he deposes. He who has neither seen nor heard the facts can only believe them; he cannot know them.

To know a fact positively it must have been seen, and to testify to it properly the witness must not only have been present when the fact transpired, but he must have given his attention to the circumstances, so as to fix them in his memory. Hearing is much more deceptive than sight, and knowledge acquired *alone* by hearing is entitled to but little confidence.

Although an expert is generally called as a witness by one only of the contending parties, it is not his duty, nor is it proper, that he should take sides in the case. Instances have been so common in which physicians have testified as if they had been paid to testify in a certain way that medical evidence has come to be

⁶ *Ex parte Irvine*, 74 Fed. 954.

spoken of very slightly. Experts are called upon to give the medical *facts* in the case, and it is their duty to confine their testimony to them, let them hurt or help whom they may. While it is natural and proper that an attorney should see but one side in a cause, it must be otherwise with a witness. He should answer *all* questions put to him courteously and to the best of his knowledge and ability and let his answers be as brief as possible.

It is further his duty, and very proper, to consult with the party who has subpoenaed him, or his attorney, and advise them before the trial as to what the general purport of his testimony will be and the conclusions to which his investigation leads him. They have called him as a witness because they believe that their side of the case and their view of the facts are right, and it would be just as dishonorable for him to allow them to call him to the witness stand believing that his testimony would support their claim, when in fact it would not, as it would be for him to allow them to persuade him to distort or falsify evidence in their behalf. Let his only desire be that justice shall be done, and this is oftener dependent upon the accuracy of his evidence than he might imagine.

When a physician is called to testify as to facts of which he has personal knowledge, he is entitled to the same fees as other witnesses and no more.

§ 17. Expert evidence.—Experts are “persons instructed by special study and experience,” and in this category are included all “men of science” or persons professionally acquainted with the science or practice in question or conversant with the subject-matter when questions of science, skill, customs and usages of trade and others of like kind arise. As such persons are presumed to possess peculiar skill and knowledge, their *opinions*, when they are called as witnesses, are admissible whenever the subject-matter of inquiry is such that inexperienced persons are not likely to prove capable of forming a correct judgment upon it without such assistance; in other words, when the matter being investigated so far partakes of the nature of a science that it requires previous experience or study, in order to attain to a knowledge of it.

The occasional need of a class of persons who are specially instructed or experienced in any art or science to act as witnesses intermediate to the facts and the conclusions to be drawn from them has always been recognized. In the Roman law they are frequently alluded to, and in the earliest common law reports they are spoken of as well-known factors in the investigation of causes. The older English practice seems to have been for the judges to be informed by the experts and to refer subjects to them.⁷ But the calling of experts by the parties in England is only a little over one hundred years old. The first expert witness whose opinion, delivered from the witness stand, was thus admitted was John Smeaton, builder of the Eddystone lighthouse, and the question was whether a bank built to prevent encroachments by the sea had caused the choking up of a harbor.⁸ Seamen are frequently called to aid courts with their special knowledge in admiralty cases.⁹ An engraver of seals may know much more than courts about the genuineness of an impression. An experienced postoffice clerk is possessed of especial knowledge in regard to postmarks.¹⁰ An artist or trained art critic is better qualified than an ordinary person to tell whether a painting is a copy or an original. Surveyors are supposed to have special knowledge about boundary marks.¹¹ Practical chemists may determine what specific poisons are found in the bodies of persons supposed to have been murdered or to have committed suicide.¹² A skilled microscopist may be able to tell whether a certain stain is blood or not, and, perhaps, the blood of what animal. An expert in handwriting may discover and point out resemblances or differences in handwriting which an ordinary person might not have noticed.¹³ Thus, it will be seen that there are many kinds of experts.

⁷ Folkes v. Chadd, 3 Doug. (K. B.) 157.

⁸ Buckley v. Rice, Plowden's Com., *p. 125, Vol. 1; Masters v. Masters, 1 P. Wms. (421) (425).

⁹ Malton v. Nesbit, 1 C. and P. 70; Fenwick v. Bell, 1 C. and K. 312; Thornton v. Royal, &c., Co., Peake, *p. 26.

¹⁰ Abbey v. Lill, 5 Bing. (Eng. C. L.) 299.

¹¹ Davis v. Mason, 4 Pick. (Mass.) 156.

¹² Reg. v. Palmer, Elwell's Med. Jur. (3d Ed.) 544.

¹³ Lyon v. Lyman, 9 Conn. 55; Moody v. Rowell, 17 Pick. (Mass.)

Although the field covered by expert testimony is large, attempts are constantly being made to enlarge it. Thus, in Ohio, in a trial for murder, where the condition and position of the body of the deceased person found on a railroad track became material upon the question as to whether death was occasioned by a passing train or by violence, railroad conductors and engineers were allowed, as experts, to give their opinions as to whether a train of cars, striking or passing over him, could have left the body in the condition and position in which it was found.¹⁴

It is not competent to admit evidence of *non-experts* that certain persons, who "it was supposed," or they were "informed," had committed suicide, and whose bodies they afterwards saw, each held a knife in his hand, grasped perfectly tight, where there was no evidence that such persons had committed suicide—even if such testimony is otherwise admissible.

Such evidence is not harmless, because a physician testified that in case of suicide by stabbing, deceased would be likely to hold the knife tightly grasped after death.¹⁵

In the relations that exist between medicine and law the testimony of experts is necessary for the purpose of arriving at truth in certain medico-legal investigations. The testimony of skilled witnesses is essential to a due observation and appreciation of facts, and such testimony can only deserve its name and fulfil its function when the witness is really skilled; that is, when he possesses those qualities of mind, that education and those stores of information which alone can make him a competent observer. On the other hand, the opinions of witnesses cannot be received when the inquiry is into a subject-matter the nature of which is not such as to require any peculiar habits of study to qualify a man to understand it.

It has been held that it is not necessary, in order to qualify a witness as an expert, that he should be engaged in the practice of his profession or science; it being sufficient that he has studied

490, 28 Am. Dec. 317; Hammond's case, 2 Greenl. (Me.) 33, 11 Am. Dec. 39; Bell v. Brewster, 44 Ohio St. 690.

¹⁴ Aidt v. State, 2 Ohio C. C. 18.

¹⁵ Redd v. State, 63 Ark. 457, 40 S. W. 374.

it.¹⁷ And the fact that the witness, although he had studied medicine, was not then a practicing physician, was held to go merely to the value of his testimony. But it must not be supposed for a moment that a man who has retired from, or never entered upon, the active practice of his profession will receive as much credit as an expert witness. With constant study and an active practice it is well-nigh impossible to keep up with the advancing lines of science, especially if that science is medicine, and no one who is not conversant with the latest theories and the newest discoveries is competent to give a reliable opinion as a medical expert, for it is *knowledge and experience or special skill* in any department of science which makes the opinions of a witness either competent or valuable. An ordinary witness testifies to facts, but an expert gives his opinion.

§ 18. Non-expert witnesses.—On certain subjects any competent witness may express his opinion or belief; thus, “non-experts may testify with regard to sounds, their character, from what they proceed, and the direction from which they seem to come; whether certain hairs were human; that one person appeared to be sincerely attached to another; as to whether one was intoxicated; whether a person’s conduct was insulting; as to resemblance of foot tracks; whether noisome odors render a dwelling uncomfortable, and many other similar things.”¹⁸ In so testifying they give the results of their observations made at the time in regard to common appearances or facts and a condition of things which cannot be reproduced and made palpable to a jury. Such testimony rests, however, upon three essential conditions: (1) That the witness details as far as possible the facts and circumstances upon which his opinion is based; (2) that the subject-matter to which the testimony refers cannot be reproduced and described to the jury precisely as it appeared to the witness at the time; and (3) that the facts upon which the witness is called to express his opinion are such as men in general are

¹⁷ Tullis v. Kidd, 12 Ala. 648.

¹⁸ Con. Mut. Life Ins. Co. v. Lathrop, 111 U. S. 612, 620.

capable of comprehending and understanding.¹⁹ Where the witness has had opportunities for knowing and observing the conversation, conduct and manner of the person whose sanity is in question, he may testify, not only to particular facts, but to his opinion or belief as to the sanity of the party, formed from such actual observation, and that, too, whether the witness is a medical man or not. A Roman Catholic priest, regularly educated and officiating as such, and constantly required by the duties of his office to judge of the mental condition of dying persons, in order that he may administer the sacrament to those only whose minds are in a proper state to receive it, has been held to be an expert as to the sanity of a person.²⁰ A woman who has borne children may testify as to whether or not another woman had the physical appearance of women when pregnant.²¹

The non-expert may also testify as to the existence of a disease so far as it affects the general health of the patient, but a physician only can testify as to the nature or cause of the disease. That a spot or stain is blood may be proved by any person who has observed it and who is able from such observation to state the fact, whether by the use of a microscope or not.²² A non-expert witness cannot testify that a person has asthma, but may testify that he has shortness of breath.²³

§ 19. Distinction between expert and non-expert witnesses.— The opinions of medical men are received as to the cause of disease or of death; the consequences of wounds; the sane or insane state of a person's mind as collected from a number of circumstances; and as to other subjects of professional skill. And such opinions are admissible in evidence, though the witness founds them, not on his personal observation, but on the case itself as

¹⁹ People v. Hopt, 4 Utah 247, 20 Am. Law Rev. 290; Carthage Turnpike Co. v. Andrews, 102 Ind. 138, 1 N. E. 364, 52 Am. Rep. 653; B. & O. R. R. v. Schultz, 43 Ohio St. 270-284, 54 Am. Rep. 805.

²⁰ Estate of Toomes, 54 Cal. 509, 35 Am. Rep. 83.

²¹ Doe v. Roe, 32 Hun (N. Y.) 628; Amer. Bible Soc. v. Price, 115 Ill. 623, 5 N. E. 126.

²² People v. Deacons, 109 N. Y. 374, 12 Cent. 305.

²³ U. B. Mut. Aid Soc. v. O'Hara, 120 Pa. St. 256, 12 Cent. 682.

proved by other witnesses. This does not mean that such witnesses can give their opinions as to the general merits of the cause, but only upon the facts as given to them. An experienced physician, after making a post-mortem examination of the body of a female, may testify as an expert as to whether or not she had been pregnant and as to the cause of her death. Where the inquiry is as to the particular state of disease under which one is laboring, and its curable or fatal character; or as to the dangerous or fatal character of a wound or blow; or in what particular mode, or with what species of weapon or instrument such blow or wound was inflicted, then it is clear that special study, observation and experience are requisite, in order to express an opinion entitled to the dignity of being regarded as evidence.

A physician who testified that he attended the post-mortem examination, giving a full description of the wounds upon the head of the deceased, their location, and that they were sufficient to produce death cannot give testimony as to the probable relative positions of the parties at the time the fatal blow was struck.²⁴ Any witness, after examining a weapon, may testify as to whether or not it is a deadly weapon.²⁵

Such witnesses, whether expert or non-expert, are not allowed to give their opinions as to any matter as to which the jury is as competent to form an opinion as they are, and no party is entitled to ask the opinion of an expert upon any question except one of skill or science. Where a body was found partially burned, and certain portions of it covered with loose clothing were not burned, the inference of a medical man that the person must have been dead before the fire broke out, as otherwise the covering would have been disturbed, is inadmissible.²⁶ So, where an expert testified that he had examined hair taken from the head of the deceased and compared it with hair found (together with blood) upon a wheelbarrow belonging to the accused; that such comparison was founded on his experience, he having made a very careful study of hair; that the hair was precisely the same

²⁴ Perkins v. State, 5 Ohio C. C. 597.

²⁵ Perry v. State, 110 Ga. 234, 36 S. E. 781.

²⁶ People v. Bodine, 1 Denio. (N. Y.) 281.

in length, magnitude, color and in every other respect, *so that any other person could have told it as well as himself*, he will not be permitted to give his opinion "that it was from the head of the same person."²⁷ On the trial of an action on a policy of life insurance, where the assured had committed suicide, and the facts warranted the assumption that he was afflicted with melancholia, it is improper to ask a medical witness if he would attribute the suicide to disease,²⁸ as this was an inference which the jury could draw, if justified by the facts, as well as an expert. In an action against a surgeon for negligence and unskillfulness, in consequence of which the plaintiff lost her hands and feet, where there is a conflict in the evidence, the medical experts cannot be asked to what they would attribute the loss of plaintiff's hands and feet,²⁹ as this falls within the same principle. Whether a change in a testator's lifelong purpose to provide for a sister, occurring upon his deathbed and without apparent motive or reason, indicates any change in his intellect, is not a question for the opinion of experts.³⁰

A medical witness may, when the issue is sanity or insanity, be asked whether such and such appearances, proved by other witnesses, are in his judgment symptoms of insanity; but he cannot be asked if the act with which the defendant is charged is an insane act.³¹ So, too, he may be asked whether the condition a person had been in was an indication of insanity, and what the act of suicide would indicate as to the soundness of his mind, as suicide is evidence tending to prove insanity.³² In a trial to recover for injuries caused by the use of the X-ray apparatus, a person skilled in the use of the apparatus may tes-

²⁷ Knoll v. State, 55 Wis. 249, 42 Am. Rep. 704; Gilbert v. Guild, 144 Mass. 601, 12 N. E. 368.

²⁸ Van Zandt v. Mutual, &c., Ins. Co., 55 N. Y. 169, 14 Am. Rep. 215.

²⁹ Key v. Thomson, 13 New Br. (2 Hannay) 224, 10 Amer. L. Reg. (N. S.) 594.

³⁰ Nelson's Will (Stockton v. Thorn), 39 Minn. 204, 39 N. W. 143.

³¹ Rex. v. Wright, Russ and Ryan 456; U. S. v. McGlue, 1 Curtis (U. S. C. C.) 1; Malton v. Nesbit, 1 C. & P. 70.

³² Frary Exr. v. Gusha, 59 Vt. 257, 9 Atl. 549.

tify as to the proper mode of its use and the probabilities and possibilities of injury from its improper use.³³ In a prosecution for rape, where a physician had testified that the child assaulted was diseased, but he could not tell whether it was gonorrhea or vaginitis, the evidences of the two diseases being undistinguishable in such patients, and had also stated that the prisoner had gonorrhea, he cannot give as his opinion that, taking into consideration the pus on her clothes and the fact that the prisoner had gonorrhea, the child had gonorrhea, as this *assumes* that the prisoner had been in contact with her in such a way as to communicate the disease; but he can properly say that the disease is contagious, or that if the prisoner had been in contact with her, he would think that her disease was gonorrhea.³⁴ Nor can an expert be asked if, in his opinion, a person was competent to make a deed, will or contract.

An expert cannot give his opinion upon the opinions of other experts or witnesses, since that would be passing upon the value of the testimony of other witnesses;³⁵ nor can the conclusions of an expert be contradicted by one not an expert. It has been decided, however, that, on a trial for murder by poisoning, after an opinion adverse to the theory of the prosecution had been given by a physician, with reference to the appearances on a post-mortem examination, and the time indicated by them when the poison was introduced into the stomach, it was competent and proper to ask an experienced chemist who had made the post-mortem if, in his opinion, a physician, from a mere post-mortem examination of the exterior surface, and the indications of inflammation which he then discovers, could determine with any degree of certainty the precise period of time when such inflammation was caused, as that was a question on which an expert might be called to give his opinion.³⁶

In a criminal case an expert cannot be asked if a certain state-

³³ Henslin v. Wheaton, 91 Minn. 219, 97 N. W. 882, 103 A. S. R. 504, 64 L. R. A. 753.

³⁴ Moore v. State, 17 Ohio St. 521.

³⁵ Haverhill Loan, &c., v. Cronin, 4 Allen (Mass.) 141.

³⁶ Hartung v. People, 4 Park Cr. Rep. (N. Y.) 319.

ment of facts justified another expert in the opinion he testified to.

These are the very questions which are to be submitted to the jury, and they are the ones to answer them.

The testimony of experts is *not* admissible on matters of legal or moral obligations, nor on the manner in which other persons would probably be influenced, if the parties acted in one way rather than another. Therefore the opinions of medical practitioners are not received upon the question as to whether a physician has honorably and faithfully discharged his duties to his medical brethren or his patients. Neither is it proper or legal to ask a witness what his own conduct would have been in a particular case. But this rule does not prevent a medical man from testifying to a fact derived from his own observation, from which another medical man's incapacity or unfaithfulness might be inferred. And a surgeon may be asked to give his opinion of a certain kind of treatment, as this does not refer to any particular part of the treatment, but to the whole of it.³⁷ In an action to recover damages for a personal injury a physician was allowed to testify what had been another physician's previous treatment of his patient, as learned from the patient; what effect it had on him, and whether or not he saw any evidence that he had been injured by such treatment.³⁸

Such a statement by a patient to his physician is admitted, however, from the necessity of the case, as this is generally the only way by which the condition of a patient can be made known to his physician. He has a fair opportunity of ascertaining its correctness by observation, and it is for the interest of the patient to tell the truth under such circumstances. And as the opinion of the physician would be competent evidence in such a case, it would be absurd to keep from the jury the reasons for his opinion, as they would then be unable to determine its soundness.

In criminal cases the opinions of medical men are very frequently called for. Thus, in prosecutions for murder, medical men are allowed to state their opinions as to whether the wounds

³⁷ Mayo v. Wright, 63 Mich. 32, 29 N. W. 832, 21 Amer. L. Rev. 177.

³⁸ Barber v. Merriam, 11 Allen (Mass.) 322.

described by the witnesses were the probable cause of death; just as a physician who has not seen the sick or injured person, after having had detailed to him the evidence of those who have seen him, may be asked the general effect of the disease described and its probable consequences in a particular case.

Where it has been shown that the attending physician administered bismuth during the illness, and the question is raised whether or not bismuth contains traces of arsenic, it is admissible for such physician to testify that he administered the same bismuth to other patients without ill effects, and that a portion of the drug taken out of the same package at the druggist's was submitted to a chemist for analysis; and the testimony of such chemist that upon such analysis he found no arsenic, is also admissible.³⁹ Cuts on the lips of a wife who, it was claimed, was smothered by her husband, which the defense claimed might have been made by her while in a spasm, are proper subjects of expert testimony.⁴⁰

It is proper to ask whether a wound in a certain place would endanger life or not. And where the knife with which the crime was committed was produced in court, it was held proper to ask a physician if such a knife would produce the wound he had described.⁴¹

The opinion of a physician as to the character and permanency of a personal injury is competent;⁴² and whether by reason of the injuries the injured party will be permanently unable to follow his trade or business or practice his profession.⁴³

It is also proper to ask such witness on cross-examination if the injury is likely to produce or be followed by certain diseases.⁴⁴

The evidence of a physician who held a post-mortem and attended the patient prior to death is entitled to more weight than that of one who only casually saw him.

³⁹ Epps v. State, 102 Ind. 539, 1 N. E. 491.

⁴⁰ People v. Carpenter, 102 N. Y. 238, 6 N. E. 584.

⁴¹ L. & N. R. Co. v. Falvey, 104 Ind. 409, 3 N. E. 389, 20 Amer. L. Rev. 469.

⁴² People v. Willson, 109 N. Y. 345, 15 N. E. 540.

⁴³ Turnpike Co. v. Andrews, 102 Ind. 138, 1 N. E. 364, 52 Am. Rep. 653.

⁴⁴ Kelly v. Erie Tel. Co., 34 Minn. 321, 25 N. W. 706.

In order that a medical witness may have all the facts before him on which his opinion is to be founded, he is generally not excluded from the court room when witnesses to mere matters of fact are excluded.

§ 20. Qualifications of experts.—The rules determining the subjects upon which experts may testify and prescribing the qualifications of experts are matters of law; but whether a witness offered as an expert has those qualifications is a question of fact to be decided by the judge presiding at the trial. No exact standard exists by which to determine the qualifications of an expert witness.⁴⁶ Much must be left to the discretion of the presiding judge in determining the qualifications of such a witness.⁴⁷ The decision of the trial judge on these questions is conclusive unless manifestly erroneous as a matter of law. The running and management of locomotives is so far outside of the experience and knowledge of ordinary jurors as to render *expert* testimony proper and admissible.⁴⁸ The opposite side may cross-examine a witness as to his qualifications as an expert, but if they do so they must question him solely in relation to his qualifications, and not as to irrelevant facts.⁴⁹ This cross-examination may be made before he has testified at all, but if it appears that he is *prima facie* qualified to testify the court may refuse to permit such cross-examination before he has testified.

In regard to the qualifications of medical experts when the question of sanity or insanity is involved, some definite rules have been agreed upon. Forensic psychological medicine being a specialty, an expert in this specialty must be skilled in three departments of science: (1) Law, sufficient to determine what is the “responsibility,” which is to be the object of the contested capacity; (2) psychology, so as to be able to speak analytically as to the properties of the human mind; (3) medicine so

⁴⁶ Ft. Wayne v. Coombs, 107 Ind. 75, 7 N. E. 743, 57 Am. Rep. 82.

⁴⁷ Commonwealth v. Sturtivant, 117 Mass. 122, 137, 19 Am. Rep. 401n; Warren v. Spencer Water Co., 143 Mass. 155, 164, 9 N. E. 527.

⁴⁸ Wright v. Southern Pac. Co., 15 Utah 421, 49 Pac. 309; Bellefontaine, &c., R. R. v. Bailey, 11 Ohio St. 333.

⁴⁹ Langley v. Wadsworth Exr., 99 N. Y. 61, 63, 1 N. E. 106.

far as concerns the treatment of the insane, so as to speak inductively on the same subject. If any one of these factors is wanting, a witness cannot be technically called an expert. And yet the tendency is to admit as experts in such cases all persons who have made mental disease a study or who have been employed in the professional care of the insane.⁵⁰

After an expert has testified other experts cannot be called to testify that he does not possess the requisite skill or experience to give an opinion. Such evidence as to an expert's qualifications would only be competent *before* his evidence is given. After the expert has testified in chief, there remains the test of cross-examination, which ought to sift him thoroughly, and show him up to the jury much better than any one else's evidence could. On such cross-examination it is proper to ask the witness what method he pursued in making an examination of an injured person, and also to ask questions for the purpose of testing his knowledge and skill.⁵¹

If the facts are doubtful and remain to be found by the jury it is improper to ask an expert, who had heard all the evidence, what his opinion is upon the case on trial; but the facts being presented to him in the form of a hypothetical question, he may then give his opinion. Nor can he give his opinion as a witness upon a case based upon statements made to him by parties out of court and not under oath.

A physician called in consultation cannot give an opinion upon acts communicated to him out of the presence of the patient, by the attending physician, for the purpose of making a professional examination. But if the same facts have been testified to, the consulting physician may be asked his opinion upon the hypothesis that those facts are true.

As the judge presiding at the trial determines whether or not the witness possesses the qualifications of an expert, it has resulted that many different tests have been applied. Thus it has been held that the mere fact that the witness was a physician rendered him competent to testify as an expert. In another

⁵⁰ 1 Wh. and St. Med. Jur., § 268.

⁵¹ L. & N. R. Co. v. Falvey, 104 Ind. 409, 3 N. E. 389, 20 Am. L. Rev. 469.

case (which was a criminal case) where the defendant was accused of the murder of his wife by strychnine, two doctors inexperienced in chemical analysis were called by the state as experts to testify as to tests applied in the chemical analysis of the stomach of the deceased, and the tests usually applied for detecting the existence of poison in such cases. Both of the witnesses testified that they were practicing physicians. One of them stated that he was not a professional chemist, but understood some of the practical details of chemistry, that portion, at least, which pertained to his profession; that he had had no practical experience in the analysis of poisons until in connection with the other witnesses he analyzed the contents of the stomach of the deceased. The other testified that he was not a practical chemist; that he did not follow the science as a profession; that he understood the chemical tests by which the presence of strychnine could be detected; that he professed to understand the principles of chemistry as laid down in the books; that he had never experimented for the purpose of detecting strychnine by chemical tests, but he had seen experiments made by professors of chemistry. That he had witnessed the trial of one test very much relied on in such cases. Their testimony was admitted over the objection of the defendant, and, on the case being taken to the Supreme Court, it was there said: "We think they were competent witnesses. It is, of course, desirable that great caution should be exercised in conducting experiments of this character, and the most skillful professionals should be secured. If conducted, however, by such as have not had experience, or by those who, though not practical chemists, give their opinions from knowledge derived from the books upon that science, such opinions would be entitled to less weight than if given by a practical chemist—that is, one who bases his conclusions upon experience as well as books. The *means* of knowledge are proper to be considered *by the jury*, and they should give or withhold credence to the opinion given, as they may believe the expert qualified to speak more or less intelligently and understandingly. But to say that none shall be permitted to give their opinions except those of the highest professional skill or those who have given their lives to chemical experiments

would, in this country, at least, render it impossible in most cases to find the requisite skill and ability.”⁵³ While the learned judge who announced this decision may be right in his last observation, it is not right that any man’s life should depend upon the testimony of those who confess their own ignorance. That men who disclaim any but theoretical knowledge upon chemical tests should be held to be experts, for any purpose whatever, upon questions requiring the application of such tests, is an absurdity, and incapable of defense. While our courts and juries cannot in all cases have the benefit of the testimony of the *most* learned and experienced, in cases requiring medical and chemical knowledge, or either, they ought not to be compelled to accept the testimony of men who so far from being experts are self-confessed ignoramuses; and it is wrong to allow a jury to be confused by listening to testimony upon such a vital question and then be told by the court that it is of very little, if any, weight, on account of the want of experience and knowledge of the witness. In other words, that the testimony of the expert is of little or no weight, as the jury may consider the witness a “little” or “no” expert; thus leaving the jury really to pass upon his competency instead of the presiding judge. As well, might a court allow all kinds of testimony to go to a jury, and then say to them, that they must not regard any hearsay or other incompetent testimony. It is the duty of the judge to keep such testimony away from the jury. The Supreme Court of Kansas said that where a witness, offered as an expert, appeared to be possessed of but little general intelligence, a court might refuse to allow him to give opinion testimony, even though it appeared that he had had some experience in the matter in question.⁵⁴

In marked contrast with the case of *State v. Hinkel*,⁵³ is a decision in New Hampshire where it was held that, “in order to entitle one to testify as an expert, it must *first* be shown that he has acquired actual skill and scientific knowledge upon the subject; and that mere opportunity for observation is not

⁵³ *State v. Hinkle*, 6 Iowa 380.

⁵⁴ *Broquet v. Tripp*, 36 Kan. 700, 14 Pac. 227.

sufficient, as the term ‘expert’ implies *both* superior knowledge and practical experience in the art or profession.”⁵⁵ And also in Wisconsin, where it was held that: A physician who has never seen a case or had any experience whatever on the subject of arsenical poisoning, and whose knowledge on the subject is derived from medical or scientific books and medical instructions is not qualified to testify as an expert as to the symptoms and effects of such poisoning.⁵⁶ These last cases give the true tests of the qualifications of an expert, and some day it will be so recognized in all our courts. But at present the views expressed in the first case generally prevail, and nothing more is required to entitle one to give testimony as an expert than that he has been educated in the particular art or profession.

The expert’s testimony should be a generalization of facts, by means of which he undertakes to explain certain phenomena or particular instances as deductions from a law of common authority and government over such facts; and his opinions should express the degree of agreement between a general law and the particular subject under investigation.

§ 21. Objections to expert evidence.—One of the great objections to expert evidence and at the same time one of the things which tends to throw discredit upon it is that experts are not only looked upon, but are actually in many cases partisan counsellors instead of impartial witnesses; and it seems as if one could obtain experts to testify in support of any theory, however absurd.⁵⁷

It has been well said that it is because medical witnesses have often been unskilful in the particular directions in which their evidence has been taken, that so much discrepancy has occurred in their statements.

There are, however, cases in which discrepancies in the evidence of experts may arise from unexpected sources and may be explained on full investigation. This was clearly shown in a

⁵⁵ Page v. Parker, 40 N. H. 47.

⁵⁶ Soquet v. State, 72 Wis. 659, 40 N. W. 391.

⁵⁷ Clark v. State, 12 Ohio 483, 489.

case in the Superior Court of the City of New York where one of the important questions was whether mustard contained starch. One of the most celebrated analytical chemists of New York testified that mustard contained over eleven per cent. of starch. Other experts, among them Prof. Chandler, of Columbia College, testified that mustard contained no starch. The evidence being thus conflicting, the analytical chemist who had testified to the presence of starch asked and obtained permission to substantiate his evidence by experiments in open court. He took mustard seed and crushed them to powder in a mortar; then placing the powder in distilled water, he boiled the mixture over a spirit lamp. He then threw some of the solution on sheets of filtering paper, and, applying his tests, exhibited the characteristic blue iodine of starch and the demonstration seemed perfect. Prof. Chandler then made experiments and demonstrated that starch did not exist in mustard. Being asked to explain the results on the other side, he said he was not certain the filtering paper would not have produced the reaction without the mustard, and demonstrated that he was right by applying the test to clean paper and producing the same blue tinge, thus showing the worthlessness of the first experiments as tests.⁵⁸ The surest way to avoid discrepancies is for the medical witnesses who are to be examined to meet and interchange views upon the subject of their testimony; and there can be nothing improper or objectionable in this, any more than there is in their separately visiting or being visited by the counsel engaged in the case.

Scientific testimony does not fail in the matter of facts because it is too minute, too cautious, or too true, but rather because it is wanting in minuteness, carefulness and precision. When it fails, it is because it is not the testimony of an expert. When facts are admitted there is often a great diversity of honest opinion with regard to their interpretation, which results from the varying range of experience and the different temperaments of mind of those giving medical evidence. It is the want of observation of facts which mars much expert testimony. The con-

⁵⁸ Gordon C. Hamilton, 43 Cent. L. Jour. 321.

ditions, therefore, which determine the existence of discrepancies in the statement of both facts and opinions are to be found in the nature of medical science and in the varying powers of observation and reflection possessed by experts. The ultimate object of both the medical and the legal profession is truth. Many ideas entertained twenty years ago are not accepted by science to-day. Science is progressive, and its existence is one of growth and change. Its growth must remove old lines which, although expressive of the truth entertained twenty years ago, do not express the truth as it is now received.

Another difficulty, and one that causes much unseemly wrangling over the taking of skilled testimony in courts, and causes such testimony to be viewed with much disfavor, is a want of precision and candor in putting questions, as in consequence thereof the witness is unable to answer clearly.

It is very necessary that counsel and the witness should understand each other, and the witness should not attempt to give his answer until he fully understands the question, so that his answer may be responsive to the question, understood by any one, and above suspicion of a bias towards either party. When a witness does not understand the gist of a question or comprehend the point of the inquiry, he cannot answer it lucidly. He may give an answer in nearly the words of the question, but this is answering only the letter of the inquiry and not giving his own ideas and opinions, which, as an expert, he is specially called for the purpose of doing.

In giving expert evidence the expert should be perfectly impartial and altogether indifferent as to the merits or demerits of the case. He should remember that he has nothing whatever to do with the consequences to which his opinions may lead, provided always that they are fully warranted by the facts and are the result of sound knowledge and due reflection. His province is distinct from that of the counsel, the judge or the jury. The counsel has a client; he has no client; the judge is the interpreter and minister of the law; with the law he has nothing to do; the jury decide upon the guilt or innocence of the accused party; he has nothing to do with either.

"Justice," it has been said, "always leans to the side of mercy, but it is not for the expert to know anything of the one or the other. If the laws are unnecessarily severe, that is not his fault, but the fault of the legislature which enacts them, and on *it* devolves the duty of amending them; it is not for him to lighten their severity or enlarge their leniency; and so surely as he attempts the one or the other he will do injury to the cause of justice."

While it is very essential that upon the witness stand the expert should be without bias, it is even more important that he should guard himself against sharing in popular prejudice, and joining in the popular outcry, against those accused of great crimes.

He ought not to feel justified in consenting to appear for either party to a cause until, having heard all the facts on which his opinion must be formed, he can conscientiously give evidence in favor of the party by whom called. He should not assert as facts things which are merely matters of opinion; he should form his opinions entirely from the medical evidence and not from collateral circumstances; for of these, as an eminent judge once said to a celebrated physician, "*we* can judge as well as medical men." He should answer the questions asked clearly and concisely, always remembering, however, that he is not only sworn to "testify the truth," but also "the whole truth," and if the questions do not call for the whole truth it is his duty in so far as he can to supply the omission.

The late Dr. Wilbur, of Syracuse, N. Y., well said: "Expert testimony should be the colorless light of science brought to bear upon any case where it is summoned. It should be impartial, unprejudiced. There should be no half truth uttered; and suppressing the *whole* truth is in the nature of false testimony."

Another reason for this reluctance among medical men is, that besides being exposed to a cross-examination upon professional subjects, which is always severe and often unpleasant, their opinions are frequently entirely disregarded by the jury; and to have their opinions thus disregarded seems to most of them little short of a personal insult. The truth really is, that this dis-

regard of the expert's opinions is more seeming than real. He will understand that this is so if he remembers that an expert is not called to express any opinion as to the *merits* of the case; indeed, he has no proper concern in the issue, and is in no sense, or ought not to be, the witness, much less the advocate of the side by which he is called. His testimony is invoked in almost an *impersonal* sense to explain the relations of cause and effect in certain physical facts that are in evidence before the court; which relations, without his testimony, would be unintelligible to the jury. And for him to attempt to pronounce an opinion upon the truth of those facts or upon the merits of the case would be to usurp the province of the jury. An opinion upon the relations of facts is not an opinion upon the truth of those facts.

"An opinion is the judgment which the mind forms on any proposition, statement, or event, the truth or falsehood of which is supported by such evidence as renders it probable, but does not constitute absolute knowledge, truth or certainty." The opinions of an expert are the same as the verdict of a jury or judgment of a court as to what is established by the facts in the case, with this difference; while the opinions or conclusions in each case are given under oath, the court and jury are under oath while learning the facts on which their conclusions are based, and those facts are detailed to them by witnesses under oath, while the expert comes to the results constituting his opinion from his own private study, observation and reflection. He is not under oath when he weighs his facts, and, however anxious he may be to come to correct conclusions, he is not under an oath to do so. And though the facts upon which the witness's opinion is based may be called for by counsel, yet from the very nature of the case it is not to be expected that the jury or court will understand them. The opinion, then, of the expert is the private judgment of the witness, given under oath.

Opinions of medical experts based upon testimony not believed by the jury or upon a state of facts assumed by the expert are mainly valueless.

The theories of such witnesses are not always reasonable, and

are never to be regarded when they manifestly conflict with established facts.⁵⁹ Thus the opinions of experts upon a question of testamentary capacity are of little weight as against proof of facts and circumstances which show mental and testamentary capacity.⁶⁰ It is not the duty of an expert to reconcile conflicting evidence, but to give his opinion on facts assumed as such in the hypothetical question. It is permissible to assume facts in a hypothetical question about which testimony has been heard. The ultimate fact is for the jury to find, and the assumption of truth in the hypothetical question in no way impugns this right nor touches upon their prerogatives as judges of the facts. The truth of the evidence must be assumed by the hypothetical question, and on such assumption of truth the witness must answer, leaving the ultimate fact as to whether or not the evidence in the hypothetical question is true for the determination of the jury.^{60*}

§ 22. Value of expert evidence.—Lord Bacon has said that, “the greatest trust between man and man is the trust of giving counsel.” And physicians as well as lawyers give counsel; and the responsibility is not lessened by reason of the fact that the counsel is given in trials at law, in the form of exacted testimony, rather than of spontaneous enunciation. Testimony forming the evidence is the foundation of every case, and upon this alone is the issue determined. It is no wonder then that lawyers are very zealous that not a link shall be wanting in the chain of cumulative facts connecting the proof with the original allegations. And there should be a corresponding degree of earnestness by experts to throw light upon the difficult problems which they are specially called upon to expound. Their position involves the dignity of their profession as well as their own personal reputation; for they are in truth advisers of the court, however much it may be that their position as such is overlooked,

⁵⁹ Stone v. C. & W. M. R. Co., 66 Mich. 76, 9 Wes. 596.

⁶⁰ Burley v. McGough, 115 Ill. 11, 3 N. E. 738.

^{60*} Per Holdom J., Traction Co. v. Roberts, Chi. Leg. News, March 9, 1907.

and that such treatment is accorded them as should be meted out only to interested witnesses. The more the ground of expert testimony can be narrowed and circumscribed the easier it will be to obtain by its assistance intelligible and satisfactory results.

"The opinions of experts are evidence to be considered in connection with other evidence bearing on the subject, but are not of themselves conclusive. The value of the rule of law permitting them to testify to their opinions is grounded on the fact that *generally* such opinions are correct. But the value of such opinions is to be determined by the jury, having reference to the skill and competency which the witnesses manifest, in connection with the other evidence which is before them to be considered in determining the matter under investigation. Experts are not infallible; generally their opinions are reliable, but sometimes they are wrong."⁶¹ Apropos of this reference to the fallibility of experts is the following case, which was an action for damages caused by the derailment of a car: "Some months before the trial an examination of the plaintiff was made by six physicians, three appearing in her behalf and three for the defendant, for the purpose of ascertaining her physical condition. At the trial several of these physicians testified that they had ascertained during said examination that she was suffering from a tumor, either ovarian or uterine, and of about the size of a cocoanut; but they differed as to its precise location. As to the existence of the tumor there seemed to be no dissent. The family physician of plaintiff testified that the tumor had increased in size until it had become about four times as large as when said examination was made.

The defendant contended that plaintiff's ailments were caused by the tumor and not by the accident of the cable car. On the other hand, plaintiff sought to show that the tumor was the result of the accident.

Ten days after the trial the plaintiff gave birth to a child at full term. On the appeal each side stipulated that such was the fact, and that she had not been suffering from a tumor at all.

⁶¹ *Pratt v. Rawson*, 40 Vt. 183.

The Supreme Court said: "Since the time of Mr. Pope it has been inquired, 'Who shall decide when doctors disagree?' The case shows that serious error may lurk in their conclusions even when they have agreed, by which we mean no reflection upon the learned and very important profession of which the expert witnesses at the trial seem to have been respectable members; for all opinion evidence is from its nature fallible to a degree beyond that of most other kinds of evidence which the law deems competent."⁶²

The jury must apply the same general rules to the testimony of experts that are applicable to the testimony of other witnesses, in determining its weight, and determine the case from the whole evidence.⁶³ And it is improper for a judge to say to them that expert testimony is to be regarded as the lowest order of evidence or evidence of the most unsatisfactory character.⁶⁴

An expert may and generally should give all the data he has and the reason for his opinions in his examination in chief.

Because expert testimony cannot be subjected to that severe scrutiny that other evidence undergoes, it is not of the same clear and positive character or value, as a general rule, as testimony to facts only. The expert, to a certain extent, assumes the duties of the jury, because he makes up opinions for them; and were he not subject to thorough cross-examination as to the means of information upon which his opinions are formed and the reasons of his opinions, his testimony would be dangerous.

In the McNaughten case, which is the leading case on the subject of the extent to which medical men may be examined as experts, especially on the subject of insanity, the House of Lords, before which the case was argued, as the court of last resort in all cases, civil and criminal in the British Kingdom, desiring instructions upon the subject of expert witnesses and the responsibility for crime of an insane man, propounded a series of questions to the most learned judges in the Kingdom. These questions embraced almost every possible phase of these sub-

⁶² Doolin v. Omnibus Cable Co., 125 Cal. 141, 57 Pac. 774.

⁶³ Epps v. State, 102 Ind. 539, 1 N. E. 491.

⁶⁴ State v. Townsend, 66 Iowa 741, 24 N. W. 535.

jects, and the answers made thereto are authoritative to this day; and whenever there is any discussion in regard to experts or insane criminals, reference is always had to these questions and answers.

Among the questions so propounded was the following: "Can a medical man, conversant with the disease of insanity, who never saw the prisoner previous to the trial, but who was present during the whole trial and the examination of all the witnesses, be asked his opinion as to the state of the prisoner's mind at the time of the commission of the alleged crime, or his opinion whether the prisoner was conscious at the time of doing the act that he was acting contrary to law, or whether he was laboring under any, and what, delusion at the time?"

To this question the judges made the following answer: "We think the medical man, under the circumstances stated, cannot in strictness be asked his opinion in those terms, because each of those questions involves the determination of the truth of the facts deposed, which is the province of the jury; and the questions are not mere questions upon matters of science. But when the facts are admitted or not disputed, and the question becomes substantially one of science only, it may be convenient to allow the question to be put in that general form although the same cannot be insisted on as a matter of right."⁶⁵

This undoubtedly stated the law as it was then (1843), but the right to ask such a question, where the facts are admitted, or to put the facts in a hypothetical question and then ask the expert's opinion is now everywhere conceded.

In most if not all of our courts there has apparently been undue deference paid to personal experience, as if it was only necessary to *enjoy opportunities* for improvement, whether improved or not, in order to constitute a witness an expert. Prof. Guy well says that while "it is freely admitted that, other things being equal, the man of experience should be preferred to the one without it, yet when one is found who has nothing else to commend him except that he has *seen*, his claim to the highest confidence might well be doubted. Indeed, what has been rightly

⁶⁵ McNaghten's case, 10 Cl. and F. 200, 8 Scott's New Rep. 595.

seen may be imperfectly remembered; what is rightly remembered may, through incapacity or inattention, be misreported, and what is rightly reported may be misunderstood. In any of these ways it may turn out that the man of mere experience is a man of information through the senses only. It is very possible, therefore, that he may be very inferior in knowledge and intelligence to the diligent student. Medical opinions must have their original foundations in authority; and if we were to confine a man's real knowledge to that obtained from personal experience only, or as it may be formed from observation alone, we should commit a great absurdity.⁶⁶

How often are men of scanty attainments seen priding themselves on their experience, thereby making a very conspicuous display of their own ignorance? For what is individual experience at the best, when compared with the collected experience of ages? A mere drop of water compared with the great ocean. Personal experience, unless enlarged, improved and corrected by that of others, is of little value. Medical testimony when of any value is but little else than a reference to authorities combined with experience.

The fact that an entirely new case in the experience of an expert is to be investigated cannot be said to invalidate his testimony, since, as may always be shown, no two cases are, in all particulars, precisely alike; and, were perfect similarity necessary before any expert could be allowed to express an opinion, no one would ever be found competent to act as such. But this would constitute an unreasonable test and deny to the witness the right to reason from analogy, which, being nothing more than the law of resemblance, is in truth the very one constantly employed by the mind in drawing inferences from facts.

Opinions upon new and hitherto unknown cases are competent as evidence whenever the practitioners of the science can state upon oath that they are able, from analogous cases, to pronounce them in any particular case, although at the same time they should admit that *precisely* such a case had never fallen under their observation in practice or under

⁶⁶ Guy's For. Med., p. 20.

their notice in the course of their reading. With all this, however, in matters of science a person cannot be considered an expert unless he has a particular knowledge of the *science* involved. And yet there neither is nor can there be any definite rule as to the special artistic, professional or scientific experience required, in order to constitute an expert. And assuming experience to form an essential and indispensable element of qualification in an expert, men equally intelligent may yet differ so widely in the single measure of their experience that undue weight is too frequently given to the testimony of an old practitioner *simply* because he is old. Age does not necessarily increase experience any more than of itself it denotes improvement; undoubtedly it multiplies the opportunities for both and, so approximating the correct rule, some of our courts have recognized this fact and discriminated in the case of experts between general and special experience. Thus a physician, although confessedly possessing the ordinary experience of his profession, may in regard to some particular problems in medical science not be an expert in the *best, most critical and truest* sense of the word. For instance, although he may have been in active practice for many years, if he has had no experience as to the effects of illuminating gas on the health of those who had breathed it, he cannot testify thereto as an expert. And his attendance upon other persons who, it was alleged, were made sick by breathing gas from the same leak, does not give him experience such as is required in an expert.

On the other hand, a physician who is a student and teacher of chemistry, when called as an expert to show the kinds of gases evolved by the manufacture of illuminating gas, may testify not only in that regard, but also as to his experience with such gases.⁶⁷

It is wrong to assume, in relation to any of the physical sciences, that because a man has been a practitioner in it he is equally competent and skilful in *all* its departments. It is very unjust to the practitioner to expect this, for we cannot know everything even in regard to the profession we follow;

⁶⁷ *Citizens' Gas Light Co. v. O'Brien Admr.*, 118 Ill. 174, 8 N. E. 310.

and generally to attain eminence in any science it is necessary to limit one's self to some particular branch of it, and medicine is no exception to this rule.

Courts will receive the opinions of physicians of any school as equally entitled to respect, leaving their credibility and authority to be weighed and determined by the jury; such witnesses are subject to being rejected when wholly ignorant upon the subject in regard to which they are called, as for instance, insanity or chemistry.

§ 23. Medical books.—A medical witness is not generally allowed to read from a medical work in support of his opinion; but in giving the reasons for his opinion he may make use of such works, as showing that his opinion is founded not only on his own examination, observation and experience, but also upon the concurrent observation and experience of others as narrated in their works. But the naked statements of books of science not verified by his own experience are of no more authority than the books themselves, and the opinions given in such books are not legal evidence.⁶⁸

There are many reasons why this rule has been adopted by the courts. "Treatises on scientific subjects are based on data which each successive year corrects and expands, so that what is written as true this year may be doubted next and rejected entirely the year following. Then again, if such books are admitted as a class you cannot distinguish, in receiving them, between those that are merely compilations and those that are the result of special study and search. Nor can such books without expert testimony be of any benefit to that particular case; and with the expert testimony they simply become a part of the testimony. The writers of the books are not on oath when they are written and the books themselves are but hearsay evidence, and if it is important let the living witnesses be called."⁶⁹

⁶⁸ State v. Baldwin, 36 Kan. 1, 12 Pac. 318, 21 Am. L. Rev. 168.

⁶⁹ Wharton's Ev., § 665; Greenl. Ev. (16th Ed), § 162i; Collier v. Simpson, 5 C. and P. 73; Commonwealth v. Wilson, 1 Gray (Mass.) 337; Carter v. State, 2 Ind. 617; State v. O'Brien, 7 R. I. 336; Gal-

An expert when testifying as to the opinion of his profession upon a certain point may cite authorities as agreeing with him, and may refresh his memory by referring to the authorities.⁷⁰ But he should state the matter as his opinion and not read extracts from the books.⁷¹

"Medical books cannot be read to the jury as independent evidence of the opinions therein expressed. Therefore, it is not proper in an action against a railroad company to recover for personal injuries, in which it was contended that the plaintiff sustained a severe shock, which affected the nerves of the spine and had produced a dangerous and progressive disease of the spinal cord, to permit the plaintiff to read to the jury certain extracts from a medical book relating to such diseases, especially as some of the medical experts stated that it was not regarded as an authority; and the fact in question was susceptible of proof by competent living physicians.

The authorities, both English and American, are practically unanimous in holding that medical books, even if they are regarded as authoritative, cannot be read to the jury as independent evidence of the opinions and theories therein expressed or advocated. One objection to such testimony is that it is not delivered under oath; a second objection is that the opposite party is thereby deprived of the benefit of a cross-examination; and a third, and perhaps a more important reason for rejecting such testimony, is that the science of medicine is not an exact science. There are different schools of medicine, the members of which entertain widely different views, and it frequently happens that medical practitioners belonging to the same school will disagree as to the cause of a particular disease, or as to the nature of an ailment with which a patient is afflicted, even if they do not differ as to the mode of treatment. Besides, medical theories, unlike the truths of exact science, are subject to frequent modi-

lagher v. Mkt. St. R. R., 67 Cal. 13, 56 Am. Rep. 713, 19 Am. L. Rev. 654; Epps v. State, 102 Ind. 539, 1 N. E. 491.

⁷⁰ Ripon v. Bittell, 30 Wis. 614; Harvey v. State, 40 Ind. 516.

⁷¹ Cocks v. Purday, 2 C. and K. 269; Commonwealth v. Sturtivant, 117 Mass. 122, 137, 19 Am. Rep. 401; Commonwealth v. Wilson, 1 Gray (Mass.) 337.

fication and change, even if they are not altogether abandoned. For these reasons it is very generally held that when, in a judicial proceeding it becomes necessary to invoke the aid of medical experts, it is safer to rely on the testimony of competent witnesses, who are produced, sworn and subjected to a cross-examination, than to permit medical books or pamphlets to be read to the jury. * * *

In this connection it should be observed that while the prevailing rule is, as above stated, that medical books cannot be read as independent evidence of the opinions which they contain, yet under some circumstances such books may be referred to. For example, a physician is sometimes allowed, while testifying, to fortify an opinion which he may have expressed by referring to medical works of standard authority on which his opinion is in part predicated; but when a medical expert has thus indicated the source of his opinion, the books themselves may be offered subsequently for the purpose of showing that they do *not* support the opinion expressed or that they contradict it.⁷²

Where a medical witness has testified *as from his own knowledge and experience* to a matter which is within his province as an expert (as that blood stains were caused by human blood corpuscles), he cannot be impeached by reading to the jury extracts from medical books.⁷³

It is also true that, while it is not a valid objection to the testimony of a medical expert that he has but little knowledge on the subject upon which he is examined except that derived from books, as he is entitled to speak from the accepted facts of medical science, it is not proper on cross-examination to ask him if he is acquainted with a certain book and, calling his attention to a certain paragraph, ask a question in the language of the book and thus indirectly introduce such passage in evidence.⁷⁴ But he may be asked as to the standing of an author and whether he is an accepted authority in his profession, and then as to

⁷² Ry. v. Yates, 79 Fed. 584, 587, 588.

⁷³ Knoll v. State, 55 Wis. 249, 42 Am. Rep. 704.

⁷⁴ Marshall v. Brown, 50 Mich. 148, 15 N. W. 55, 17 Am. L. Rev. 471.

whether or not such author's opinions agree with his own upon the particular subject.

§ 24. Improvement of expert evidence.—Some suggestions have been made by writers and something has been done by some countries for the purpose of improving and thus making more reliable the testimony of experts.

One remedy suggested is, that the expert should be called in by the court, be under the protection of the court and adequately compensated by the public, as other officers of the court are compensated. And that in no case should the interested parties to a suit be allowed to employ experts; and in turn experts should be prohibited, under severe penalties, from receiving any fees from litigants. And in order to assist the courts in calling experts, it is expected that medical societies designate those who are especially learned and skilled in particular departments of medicine and surgery, as proper experts in those departments, and from time to time furnish a list of such to the courts in their vicinity, and that they further use their influence to procure the necessary legislation to bring about this result.⁷⁵

Another authority has said that "some mode should be devised whereby the motive which is now offered to experts to testify so exclusively for one side, should be not only counteracted, but entirely removed, and a contrary motive, for impartiality, presented. The nature and cause of the difficulty to be removed depends largely upon the fact that they are selected and paid by the parties, and come into court as the hired advocates of those who employ them. Any man when approached by the counsel for one party, and furnished only with the views and facts of one side, and asked to give his *opinion*, naturally gives a one-sided opinion; and, having committed himself to one side, he is thereafter rendered incapable of forming a fair and unbiased judgment upon the facts of the case. He becomes disqualified to act as a juror in the case. And when it is considered that this testimony is given to instruct, educate and inform the court and jury in regard to the proper mode of determining the

⁷⁵ 1 Med. Leg. Jour. 208.

case, and that it is no uncommon occurrence for a case to turn very much upon the scientific and professional testimony, it is no less important that the experts should be wholly uncommitted, in opinion, than that the jurors should be. It seems very obvious, therefore, that this class of witnesses should be selected by the court, and that this should be done wholly independent of any nomination, recommendation or interference of the parties, as much so, to all intents, as are the jurors. To secure this, the compensation of scientific experts should be fixed by statute, or by the court, and paid out of the public treasury, and either charged to the expense of the trial, as part of the costs of the cause, or not, as the legislature should deem the wisest policy. The mere expense of the experts, when selected in this mode, would be as nothing, in comparison with the expense which now is unavoidable in consequence of the enormous consumption of time in most of the trials of this class, by the unnecessary multiplication of experts introduced on each side with the object to overcome the adverse testimony of that character.⁷⁶

Most German states have schools of established medical experts, in matters of medical jurisprudence and of sanitary economy, but this advantage is not universally enjoyed. In *some* cases in France the judge calls in experts according to his discretion. Sometimes he is guided by personal confidence in his family physician; sometimes by the popular reputation of a distinguished practitioner, without any assurance that the expert thus called has made the particular subject-matter of the trial his specialty. *This* practice has been beneficially modified in Paris by the appointment by each court of a certain number of permanent experts, whose duty it thus becomes to familiarize themselves with the learning of their departments and to devote to it a special interest. Even here, however, there is no fixed system binding imperatively the courts.

In Germany they have experts who are officers of the state, whose duty it is to make special studies of different subjects so as to be able to testify in regard thereto, and also to conduct all

⁷⁶ 1 Redf. on Wills, p. 156n.

post-mortems in criminal cases. Such experts must be scientifically trained in medicine, surgery and obstetrics, and must have passed an examination in their specialty of medical jurisprudence before the Supreme Medical Board of the state. For every county there is appointed a governmental physician or surgeon as an expert; a medical college is established for the province, to which appeal may be had in cases in which experts differ, and there is a final appellate court for the whole state to which a still further appeal may be prosecuted from the medical college.⁷⁷

There, at the present time is the only place where the professional and governmental expert is found, paid by the government, dependent upon neither side for his compensation and presumably the personification of impartiality. The appointment of these experts by the government, although they are required to be first called in criminal cases, does not preclude the calling of other experts. These experts called by the parties may be confronted, listened to and judged by experts called in by the court, who are able and have the power to weigh and sift their testimony.⁷⁸ It is not true, however, that a stipendiary of the state can *always* be relied on to be impartial, especially in criminal cases.

Whether the German, the French or the American method is the cure all for the present evils attendant upon the calling of expert witnesses cannot be determined until after they have been fully tried. American medico-legal scholars are of the opinion generally that the evils apparent in the taking of expert evidence cannot be cured by legislation; that the greatest hope lies in the education both of the medical and legal professions as to the rights and duties of each; that no proposed or enacted legislation can accomplish this, and therefore parties should be free to conduct their legal contests in their own way, calling such experts as each side may desire, subject only to the power of the court to determine in the first place, not how much ability or

⁷⁷ 2 Wh. and St. Md. Jur. (Pt. II), § 1249; German Code of Civ. Proc., § 369; German Code Crim. Proc., §§ 73, 74.

⁷⁸ Clemens Herschel, 21 Am. L. Rev. 575.

fitness the proposed expert possesses, but whether he possesses any, and, further, subject to the test of cross-examination, which will undoubtedly be rigidly exercised in every case.

As medicine is not an exact science, there is more complaint in regard to medical experts than those of all other kinds, and unless something is done for its correction this kind of testimony will fall into such disrepute as to be discarded or disregarded altogether.

The remedy for many of these evils, even if no change is made in the present mode of calling experts, lies with the medical profession; and unless they do resolve to prepare themselves thoroughly beforehand, and divest themselves of all partizanship in the trial, they will not be heard when they complain that they have been treated the same as ignorant witnesses or paid counsel.

CHAPTER IV.

HYPOTHETICAL QUESTIONS—FEES.

§ 25. Hypothetical questions.	§ 27. Physicians' fees and their collection.
26. Experts' fees.	28. Last sickness—Paupers.

§ 25. Hypothetical questions.—Wherever and whenever experts are called upon to testify, their examination is first as to their qualifications as experts. Their subsequent examination is usually conducted by means of hypothetical questions.

While technically the testimony of a physician, based upon his acquaintance with an individual or knowledge acquired by attendance upon him or medical examination of him, can be called expert evidence, in my judgment it should be placed in a different category from that which is properly opinion evidence based upon a hypothetical statement of the facts relating to the person or subject under investigation. The generally accepted view, however, is thus expressed by a well-known writer:

Actual personal observation is not needed where the testimony consists in conclusions drawn from premises, but is replaced by the consideration or examination of these premises, which may be presented hypothetically to the witness. Where the witness has learned the premises by actual observation they need not be stated to him hypothetically. Though hypothetical presentation is not universally necessary, it is certainly necessary where the premises are not supplied by the witness himself. If a witness is skilled enough his opinion may be adequately obtained on a hypothetical question alone; and a witness may testify both from personal observation and in answer to a hypothetical question.¹

A hypothetical question is one propounded to a witness detail-

¹ 1 Wigmore on Evidence, §§ 674, 675, 676, 677, 678.

ing what the questioner claims are the facts proven in the case and requesting the opinion of the witness (provided those facts are true) as to the probable^{1*} result of those facts or their effect upon the person under investigation. It is the duty of the court to determine whether a question put to an expert witness is one proper to be put, and, when put, to see that it is in such shape as to present the facts upon which it is founded clearly and intelligibly, and, if necessary, to have it reduced to writing, to enable the witness to answer intelligently and the opposite counsel to cross-examine or offer testimony to meet it. And so long as it contains no irrelevant matter, not proper to support an opinion or no statements of facts not in evidence or assumed to exist for the purpose of the question it may be as long as counsel desire to make it.^{1**}

The hypothetical question submitted by District Attorney Jerome during the Thaw trial to six different experts on insanity contained fifteen thousand words. The reading of the question occupied nearly an entire session of the court.

But there is a record of a still longer hypothetical question. It was propounded to Dr. Jelley, a Boston expert on insanity, during the trial of the Tuckerman will case before Judge McKim, in the Probate Court of Suffolk County, Massachusetts. The interrogator was Robert M. Morse. The issue was as to the mental condition of the testator. Mr. Morse began his question with the opening of court in the morning and reached the interrogation mark at the end as the court was about to adjourn at noon. The question contained twenty thousand words and is regarded as the longest question ever asked in a court of law. The answer comprised just three words—"I don't know."

It is proper to propound a hypothetical question to an expert, based on any facts of which there is evidence, though the weight of evidence may be strongly against the truth of the facts assumed, and it is for the jury to disregard the opinion if the evidence fails to establish the facts thus assumed.² Thus, in an

^{1*} Peterson v. R. R., 38 Minn. 511.

^{1**} Deig Ex'r v. Morehead, 110 Ind. 451, 11 N. E. 458; Mayo v. Wright, 63 Mich. 32, 5 Wes. 595.

² People v. Bowers, 79 Cal. 415, 21 P. 752.

action for malpractice of a physician and surgeon, there may be included in a hypothetical question, proper in other respects, what the patient said to the doctor as to his feelings of pain and sensations^{1**} and what the attending surgeon said to the patient during treatment concerning the cause of certain depressions and enlargements about the dislocated joints;³ and there may also be incorporated therein such facts as the medical witness has stated he himself knows.⁴

In a prosecution for the murder of an infant child, upon a hypothetical statement of the condition of the body of the child the morning after its death, and also as shown by a post-mortem examination made four days after its burial, it is proper to ask the medical expert what, in his opinion, caused the death of the child, and whether, under the conditions set forth in the hypothetical case, there was any disease which would produce death in an infant healthy and all right in every respect at birth.⁵ By reason of the great range which a hypothetical question may cover and the necessity there exists that an expert should fully prepare himself beforehand for his examination, so that he will be able not only to answer the questions put to him, but answer them without unnecessary delay, understandingly and intelligibly, it is usual to submit a copy of the hypothetical questions in a case to the experts before they are put upon the witness stand, so as to give them an opportunity to study them. An expert can say in answer to a hypothetical question that, if the facts grouped together in the question are in harmony with the general tenor of the person's conduct and mental manifestations, they indicate soundness (or unsoundness), but if, on the contrary, they are exceptional, it would be necessary to know more of the general tenor of his ordinary life to enable the witness to determine as to his mental condition. But such an answer will not in general be a suitable one to give, for in most instances the question will be broad and definite enough to indicate whether the facts stated are exceptional or not. The

³ Boor Adm'r v. Lowery, 103 Ind. 468, 3 N. E. 151, 53 Am. Rep. 519n.

⁴ L. & N. R. Co. v. Falvey, 104 Ind. 409, 3 N. E. 389, 20 Am. L. Rev. 469.

⁵ People v. Foley, 64 Mich. 148, 31 N. W. 94.

above definition may be made clearer by example of a question actually propounded in the trial of a cause.

One of the most famous trials in this country was that of Guiteau for the murder of President Garfield, which was a case depending almost entirely on expert testimony, for the fact of the killing by the prisoner was not disputed.

Experts were produced on both sides of the Guiteau case and the questions asked of them were very skilfully drawn, and among them the following question was put by Guiteau's counsel to William W. Godding, who at the time of his examination had been for three (3) years in charge of the Washington Asylum for the Insane:

"Q. Assume it to be a fact that there was a strong hereditary taint of insanity in the blood of the prisoner at the bar; also, that at about the age of thirty-five years his own mind was so much deranged that he was a fit subject to be sent to an insane asylum; also, that at different times from that date during the next succeeding five years he manifested such decided symptoms of insanity, without simulation, that many different persons, conversing with him and observing his conduct, believed him to be insane; also, that during the month of June, 1881, at about the expiration of said term of five years, he honestly became dominated by the idea that he was inspired of God to remove by death the President of the United States; also, that he acted upon what he believed to be such inspiration, and what he believed to be in accordance with the divine will, in preparation for and in the accomplishment of such a purpose; also, that he committed the act of shooting the President under what he believed to be a divine command, which he was not at liberty to disobey, and which belief amounted to a conviction that controlled his conscience and overpowered his will as to that act, so that he could not resist the mental pressure upon him; also, that immediately after the shooting he appeared calm and as one relieved by the performance of a great duty; also, that there was no other adequate motive for the act than the conviction that he was executing the divine will for the good of his country. Assuming all these propositions to be true, state whether, in your

opinion, the prisoner was sane or insane at the time of shooting President Garfield. A. He was unquestionably insane, in my opinion."

Guiteau was convicted and hanged, which was a finding that he was sane, and it seemed as if the jury were furnished with all the light and information possible, and yet some scientists are of a different opinion both as to the quantum of the evidence and the conclusion to be drawn therefrom.

And if the trial had been prolonged until now, there would still have been new tests suggested to be applied.

§ 26. Experts' fees.—Every member of a community is bound to do all in his power to aid in furthering the administration of justice, for this is a source of mutual benefit to us all. Hence it follows that all are bound to obey the command of a subpoena, whether called as ordinary witnesses or as experts. It has been asserted that an expert was not bound to pay any attention to a subpoena, but this is a mistaken assumption, for a subpoena is a peremptory writ, and the power of our courts is such that any witness properly served with a subpoena can be compelled to attend. "A subpoena," says Chief Justice Riddle, "is a writ, wherein the state commands the witness to appear and testify, not for the sake of the plaintiff or defendant, either in a criminal or civil case, but for the investigation of truth and the adjudication of right."⁶

But, having attended, is he bound to testify for the same fees as an ordinary witness? Upon this question there exists quite a conflict in the authorities, but, looked at as an original question in the light of reason and justice, he is not. And further, the weight of authority, if not in numbers, at least when the reasons of the decisions are considered, is that when the physician is asked for his opinion upon any subject as an expert he is entitled to his pay therefor, the same as if he were in his office. His knowledge and experience are his *property*, and no rule of law or custom of courts ought to deprive him of his property without compensation.

⁶ Dills v. State, 59 Ind. 15.

It is also well settled that, if he wishes to receive extra compensation, he should demand the same before answering the questions put to him, the amount of compensation to be determined by a consideration of the standing of the expert, the importance of the case and the probable length of time the expert will be detained; and whenever the expert is entitled to extra compensation, until his fees are paid, or promised, he need not give any testimony.

Do not be misled in this matter if it is provided in the statutes of the state where you may be located, as it is in some states, that a witness may demand his traveling fees and a fee for one day's attendance when the subpoena is served on him, and if the same be not paid, the witness shall not be obliged to obey the subpoena; this only means that if at the time the officer serves the witness with a subpoena he demands his fees, he will be entitled to mileage and the fees of an ordinary witness for one day, and has no reference to the extra compensation of an expert.

If an expert, when in the witness box, gives his opinion without obtaining either his fees or security for them, he cannot recall the opinion, for the same has become evidence for all purposes, and he may be re-examined and cross-examined at any length upon it.

Professor Washburne, one of the best legal writers of this country, who in his lifetime was one of the leading professors in the Harvard Law School, in speaking of expert witnesses, said: "The subject of expert testimony opens a new inquiry which affects the expert himself. Shall he attend court day after day at the beck of any party, the same as an ordinary witness, and then give as evidence, for the usual fees, what has cost him years of diligent labor and research? I do not understand," he says, "that a party has a right to call upon a man of skill and science to exercise these in the trial of an ordinary question by tendering him the fees of an ordinary witness."

In order to entitle a party to fees as an expert it must be shown that he was called as such, and to testify to an opinion founded on his special study and experience.⁷

⁷ *Snyder v. Iowa City*, 40 Iowa 646.

The want of uniformity in the decisions of the courts of the different states upon the question of experts' fees cannot be explained, and we can only accept them as we find them.

In the State of Texas it is laid down as the law that "the court may *compel* a physician to testify as to the result of a post-mortem examination, and *no court* would be excusable in exonerating him from giving such evidence without pay on the ground that it would be a professional opinion."⁸ This decision was announced in 1879. In 1875 it had been decided in Alabama that "a physician is punishable for *contempt* for refusing to testify as an expert in a criminal case without being paid for his testimony as for a professional opinion."⁹ It was decided by the Common Pleas Court of Warren County, Ohio, in the case of Dr. Frank H. Darby, that the word "witness" is used in the statutes of Ohio in its ordinary sense and applies alike to all who may be summoned to testify, whether experts or non-experts, whether called to testify as to matters of fact or to matters of opinion; that if experts are to be allowed extra compensation, it will be a matter for the legislature and not for the courts.¹⁰

The true view of the subject has been overlooked. That is, that in calling upon a physician to give an opinion a demand is made upon him to part with what is his *property*, *i. e.*, his knowledge and learning, which ought not to be done by asking for his opinion, and compelling him to give it, without just compensation, any more than they would take any other citizen's property.

In the cases cited the question was squarely presented and decided, and they are not like the case in Illinois, where the physician, after *voluntarily* testifying as to the condition of a party, was held guilty of contempt for refusing to answer whether a blow struck with the weapon with which the injury was inflicted would produce that condition.¹¹

The cases upon the other side are supported by the better rea-

⁸ Summers v. State, 5 Tex. App. 365, 374, 377.

⁹ Ex parte Dement, 53 Ala. 389, 25 Am. Rep. 611n.

¹⁰ State ex rel v. Darby, 17 Ohio Law Bull. 62.

¹¹ Wright v. People, 112 Ill. 540.

sons and are just as emphatic. In Indiana, in 1877, the Supreme Court said: "Physicians and surgeons whose opinions are valuable to them as a source of their income and livelihood cannot be compelled to perform service by giving such opinions in a court of justice without payment therefor."¹² And to the same effect are the decisions in the Supreme Court of Massachusetts¹³ and in the United States District Courts in Arkansas¹⁴ and Massachusetts.¹⁵

Since the above decision in Indiana a statute has been passed by the legislature of that state which provides that a witness who is called as an expert may be compelled to testify without payment of extra compensation. Iowa, North Carolina and Rhode Island have statutes on this subject which provide exactly the contrary, *i. e.*, that an expert *cannot* be compelled to testify unless he is paid an extra and suitable compensation.

There seems to be a misapprehension by some of the authorities of the relations between "fact" and "opinion" evidence. Some authorities claim that as the opinion is frequently predicated upon facts elicited by the expert himself, he is not, therefore, entitled to extra remuneration. Other and better authorities hold that medical experts are really advisers of the court, *amici curiae*, and as such are entitled to special consideration and remuneration.

In the Indiana case it was said: "The position of a medical witness testifying as an expert is much more like that of a lawyer than that of an ordinary witness testifying to facts. The purpose of his service is not to prove facts in the cause, but to aid the court or jury in arriving at a proper conclusion from facts otherwise proved. The property which an attorney or physician may have in his professional knowledge, if it is to be regarded in the light of property, may not be of a tangible corporeal character; it may be neither goods nor chattels, lands nor tenements; but it may nevertheless be property. A party who

¹² *Buchman v. State*, 59 Ind. 1, 26 Am. Rep. 75.

¹³ *Ex parte Clark*, 104 Mass. 537.

¹⁴ *United States v. Howe* (U. S. D. Ct. Ark.), 12 Cent. Law Jour. 193; see also *Webb v. Paige*, 1 Carr. & Kirw. 23.

¹⁵ *In re Roelker*, 1 Sprague (U. S. D. Ct. Mass.) 276.

has a copyright in a book has a *property* which consists, not in the right to the book merely, but in the exclusive right of multiplying copies thereof.”¹²

In another case¹³ the court said: “There is a wide distinction between a witness called to depose to a matter of opinion depending upon his skill in a particular profession or trade, and a witness who is called to depose to facts which he saw. When he has facts within his knowledge, the public have a right to those facts, to be used in a court of justice in criminal or civil trials; but the skill and professional experience of a man are so far his individual capital and property that he cannot be compelled to bestow them gratuitously upon any party; that the public, no more than a private person, has a right to extort services from him in the line of his profession or trade without adequate compensation. A physician cannot lawfully be compelled to testify as an expert to matters of medical science against his objections, unless first compensated by a reasonable fee, as for a professional opinion; and his refusal to testify as to matters of medical science, without such compensation, cannot be punished as a contempt.”

This question came up in rather a strange way in a case where the district attorney of New York had procured the services of Dr. Hammond by agreeing to pay him \$500 as an expert witness in the special department of mental disease. The prisoner’s counsel claimed that this was an irregularity and that the prisoner was prejudiced thereby. But the court said: “We do not think the calling of Dr. Hammond as a witness, and the payment to him of a sufficient sum to secure his attendance at the court during the trial, was in any respect an irregularity, or did any wrong to the prisoner. It seems to us that the district attorney was acting in the line of his duty as public prosecutor in securing the attendance of a proper medical witness of high repute to meet the distinguished medical experts whom he knew the prisoner expected to call on his side. He would have met the requirements of the subpoena if he had appeared in court when he was required to testify and given impromptu answers

¹² People v. Montgomery, 13 Abb. Pr. (N. Y.) N. S. 207.

to such questions as might have been put to him in behalf of the people. He could not have been required, under process of subpoena, to examine the case, and to have used his skill and knowledge to enable him to give an opinion on any points of the case, nor to have attended during the whole trial and carefully heard and attentively considered all the testimony on both sides, in order to qualify him to give a deliberate opinion on such testimony, as an expert, in respect to the question of the sanity of the prisoner."

In Massachusetts it was held that where an agreement was made by one to go into court at a future day and testify as an expert as to a matter which he had examined, he was entitled to recover a reasonable compensation for his services in addition to the statutory fees, though summoned and paid the statutory fees without any demand at that time for extra pay, and even though he was not asked on the witness stand any question as an expert.¹⁷

The decisions quoted only determine the law in the particular states where the question arose, and where there is a decision by the Supreme Court, or a statute upon the subject, it is the duty of the expert to govern himself in accordance with the law of the state of his residence.

But in my judgment the weight of authority, both in numbers and reason, is on the side of the question which holds that the expert is a distinct species of witness and that his opinions are entitled to consideration as distinct from the ordinary testimony in the case; that the mechanic and the philosopher, the laborer and the scientist, are distinguishable, because one deposes to a fact which came under his notice, and the other lays under contribution the accumulated treasures of his observation, his judgment and his experience, to facilitate and to correct the judgment of the court. Therefore, where an expert is called in any cause, justice and reason require that he should be paid for his professional opinions when given in court the same as if given in his office, the amount to be determined by his own standing, the importance of the case and the length of time he is engaged in preparation and in court.

¹⁷ Barrus v. Phareuf, 166 Mass. 123, 32 L. R. A. 619.

And further, if he wishes to test the question, he must demand his fees before he gives his opinion, remembering that if the court decides that he must answer without being paid extra compensation, he may not establish a principle, but he will save himself time and trouble by pocketing the manifest injustice and answering the questions to the best of his ability.

§ 27. Physicians' fees and their collection.—Having thus examined the subject of the compensation of experts, we will now take up a subject not generally treated of in works on Legal Medicine, although as the subject of the compensation of experts is important to some members of the medical profession, this one is of importance to *every* member of the profession. This subject is physicians' fees and their collection.

In almost every state statutes have been passed regulating the practice of medicine and defining the requisites which must be possessed by one desiring to practice medicine. Every practitioner of medicine will have to qualify himself in accordance with the requirements of the state in which he resides, for such laws have been uniformly upheld as a valid and legitimate exercise of the police powers of the state for the protection of the lives and limbs of its citizens.¹⁸

It is necessary that a physician should be qualified to practice in accordance with the statutes of the state where he resides in order to successfully maintain an action for his fees.

¹⁸ Cooley on Torts, §§ 289, 290; Richardson v. State, 47 Ark. 562, 2 S. W. 187; Ex parte McNulty, 77 Cal. 164, 11 A. S. R. 257, 19 Pac. 237; Harding v. People, 10 Colo. 387, 15 Pac. 727; Williams v. People, 121 Ill. 84, 11 N. E. 881; Eastman v. State, 109 Ind. 278, 58 Am. 400, 10 N. E. 97; Orr v. Meek Admr., 111 Ind. 40, 11 N. E. 787; State ex rel v. Green, 112 Ind. 462; Wilkins v. State, 113 Ind. 514, 13 Wes. 354; Bibber v. Simpson, 59 Me. 181; Hewitt v. Charier, 16 Pick. (Mass.) 353; People v. Phippen, 70 Mich. 6, 14 Wes. 247; State v. Board, 32 Minn. 324, 50 Am. Rep. 575, 37 N. W. 888; State v. Gregory, 83 Mo. 123, 53 Am. Rep. 565; Ex parte Spinney, 10 Nev. 323; Sheldon v. Clark, 1 Johns. (N. Y.) 513; Musser v. Chase, 29 Ohio St. 577; France v. State, 57 Ohio St. 1; Logan v. State, 5 Tex. App. 306; Dent v. West Virginia, 129 U. S. 114, 32 U. S. Sup. Ct. (L. Ed.) 623; State v. Dent, 25 W. Va. 1; Fox v. Territory, 2 Wash. Ter. 297, 5 Pac. 603.

The only differences which may be found in the decisions of the courts arise when a court is called upon to decide what is meant by the term "practicing medicine."¹⁹

The Egyptian physicians of old were paid by the state, but they were not prevented from accepting remuneration from individuals, and they were allowed to make demands for their attendance, *except* on a foreign journey and during military service.

In the earliest times among the Romans neither a physician nor an attorney was allowed to charge for his services. This was because of the theory then extant that men entered these professions and practiced for the honor which they brought them. In England down to 1858 a physician could not recover for his services without an express contract therefor, but this doctrine has never prevailed in the United States except for a few years in New Jersey. We have advanced far beyond such notions in this age and generation, and a custom which was suited to a civilization not so complex as ours has had to give way to more practical ideas.

The great and constantly increasing demand for the services of educated men and women as physicians, who shall devote their lives exclusively to the practice of medicine, has shown conclusively the injustice, as well as the absurdity, of expecting them to practice their profession without reward, or at least without the *promise* of reward.

Every person, then, authorized to practice medicine may maintain an action for his fees, and it has even been held that physicians and surgeons can recover for the services of their students in attendance upon their patients.²⁰

¹⁹ Wheeler v. Sawyer, 6 New E. 826; Bibber v. Simpson, 59 Me. 151; State v. Buswell, 40 Neb. 158; State v. Gravatt, 55 L. R. A. 791, 65 Ohio St. 289, 87 A. S. R. 605; State v. Mylod, 20 R. I. 632, 41 L. R. A. 428, 40 Atl. 753; Nelson v. Harrington, 1 L. R. A. 719n, 72 Wis. 591, 7 A. S. R. 900.

Treatment with arc lights, after diagnosing disease by microscopic examination of a drop of blood is "practicing medicine." O'Neil v. State, 115 Tenn. 427, 90 S. W. 627.

²⁰ People ex rel v. Monroe, 4 Wend. (N. Y.) 200.

Many curious stories have been told about physicians and their fees, and among them the following:

A celebrated Dublin surgeon was once called to see a wealthy and fashionable young man remarkably fond of his handsome face and person. He found the patient seated by a table, resting his cheek upon his hand, whilst before him was displayed a five-pound note. After some hesitation he removed his hand and displayed a small mole on the cheek. Calling the surgeon's attention to it, he said he wished it removed. "Does it inconvenience you?" said the surgeon. "Not in the least," was the answer. "Then why wish for its extirpation?" "Because I do not like the look of it." "Sir," then said the surgeon, "I am not in the habit of being disturbed for such trifles; moreover, I think that little excrescence had better remain untouched, since it gives you no uneasiness; and I make it a rule only to take from my patients what is troublesome to them." So saying, he took the five-pound note, slipped it into his pocket and walked out of the room, leaving the patient in a state of perfect astonishment.²¹

It is not customary, nor is it necessary, for a physician, before beginning an attendance upon a patient, to make a contract as to the amount he shall receive for his services, for it will always be understood that he is entitled to receive the usual and customary prices for like services prevailing at the place where the services are rendered.

His claim may be proved by his own oath and by his account book containing the original charges. This account book is the book in which every physician should keep the daily register of his business, and the charges should be made on or near the day during which the services are rendered in order to make it competent as evidence. The fact that a physician is employed or the services rendered and the entries made on Sunday does not render the claim uncollectible at law.

A physician is in no case a guarantor of the good effects of his treatment, unless he makes a special contract to that effect. All that it is necessary for him to show, in order to recover for

²¹ Milligan's Curiosities of Medical Experience, 234.

his services, is that he has employed the ordinary degree of skill of his profession and has applied remedies fitted to the complaint and calculated to do good *in general*,²² even if the patient in the particular case may have derived no good therefrom.

But if, on the other hand, he has ignorantly and unskilfully administered improper remedies, or ignorantly and unskilfully in any way treated his patient, he not only cannot recover anything for his services, but may be liable to an action for damages, or to a criminal prosecution, or both.²³

In order to arrive at a decision as to what is a proper charge in any given instance, the position and standing of the physician, the character of the services rendered, should be considered, together with the pecuniary condition of the patient. Physicians in practice in the same locality or neighborhood may be called as experts to testify as to the reasonableness or otherwise of any given charge or charges. And a person who is not a physician is not a competent witness upon that question. In such an action the physician is entitled to recover the reasonable value of his services without any reference to what his income is or has been; neither is it at all important what others would have done the work for.²⁴

A physician should always keep his books so that any person of intelligence can tell from them the amount and dates of his charges.

The mere fact that a physician has sent in a bill for a certain amount will not prevent his recovering a larger amount if he can prove his services to be worth the larger amount.

The physician is the sole judge as to the necessities of his patient and as to the number of visits required to be paid him.

When more than one physician is called in, and attends regularly, the visits of each cannot rank as a consultation, though made at the same hour so that the physicians actually meet at the bedside of the patient.²⁵ Such visits are considered and can only be charged for as ordinary visits.

²² Vanhooser v. Berghoff, 90 Mo. 487, 3 S. W. 72.

²³ Alder v. Buckley, 1 Swan (Tenn.) 69.

²⁴ Board of Commissioners v. Chambers, 75 Ind. 409.

²⁵ Collins v. Graves, 13 La. Ann. 95.

When a consulting physician renders medical and surgical service to a patient with his consent, and without objection or notice that the services are to be paid for by the attending physician, the law raises an implied promise on the part of the patient to pay him what the services are reasonably worth; and to overcome such implication, where a different arrangement was claimed to have been made for the payment of such services, it must be proved by satisfactory evidence that the physician knew of it, and either expressly or impliedly assented to it.²⁶

A physician is not bound to furnish medicines to his patient, but, in case he does do so, he may charge for them and recover the value thereof from the patient.

It is different, however, with surgical instruments, splints and other professional paraphernalia, which are the necessary adjuncts to the practice of the surgeon and are part of his personal property. Their consumption in the ordinary way and in the line of his daily duties is his own loss, and the patient cannot be charged with them. But if a special instrument is furnished to a patient for his own exclusive use, or an instrument be so altered for use in a particular case as to destroy its specific value to the surgeon and render it useful only to the patient, it may be charged to him.

All that any physician undertakes to do is that he understands and will faithfully treat the case, according to the recognized law and rules of his own particular school. Therefore he should never, even with the consent of his patient, attempt to treat him by any other than the recognized methods of his own school of medicine. For if he does he inferentially admits his want of the ordinary skill belonging to his profession and thus perpetrates a fraud upon the public; and should he fail to benefit the patient, the evidence of this duplicity and ignorance would justly and certainly destroy all right to recover for his services.²⁷

Where a physician has been in the habit of charging a patient a certain sum for his services, in the absence of any agreement he cannot charge a greater sum for similar services.

²⁶ Garrey v. Stadler, 67 Wis. 512, 58 Am. Rep. 877.

²⁷ Force v. Gregory, 63 Conn. 167, 38 A. S. R. 371.

Physicians are not bound to attend upon whomsoever calls upon them;²⁸ but, having accepted the call, they must continue in attendance upon the case until recovery or otherwise, unless dismissed by the patient, or the person employing them; or they may withdraw from it themselves, provided they give reasonable notice of their intention, so that another medical attendant may be secured.

And in every case they are bound to exert their best skill and all necessary diligence to carry it to a speedy and successful termination.

Where a contract is made for a physician's services for a specific time at a specified price, so long as he continues able and willing to, and actually does, render such services in a proper manner, he cannot be legally discharged before the natural expiration of the contract. And if illegally discharged, he can, at the expiration of the time, recover the contract price.

Although there seems to be no *legal* objection to a physician's making a contract of "no cure, no pay," yet it is not considered strictly *professional* to make such a contract. Aside from such considerations, there would be too many chances in favor of the patient to make such contracts popular. If, however, such a contract is made, it is not necessary to have any specific price fixed for the services, nor will any excuse for non-performance be received.

Of course, all such contracts contemplate the payment by the patient of a much larger fee than would ordinarily be expected, but a physician ought not to make an insurance agent of himself. If he does his duty, he ought to be paid, whether successful or not, and he ought always to insist upon that.

Where a man made a contract for treatment with a Christian Scientist, it was held that the court would not pass on the merits or demerits of Christian Science; that the contract being proven and the services rendered, the Christian Scientist was entitled to recover the contract price.²⁹

²⁸ Hurley Adm'r v. Eddingfield, 156 Ind. 416, 59 N. E. 1058, 83 Am. St. 198.

²⁹ Wheeler v. Sawyer, *supra*, 6 N. Eng. 826.

Sometimes the question arises as to who is responsible for the physician's fees. Thus, where "A" says: "Attend on 'C,' and if he doesn't pay you I will," you cannot compel "A" to pay you. But if "A" says: "Attend on 'C,' and I will pay you," he is then bound to pay you, and, as you are really in his employ, he may dispense with your services at his pleasure.

So also where the mother of "A" was taken sick and a physician was called, who began to treat her, but on his second visit she became dissatisfied with him and asked that another physician be called, it was decided that "A," having told the physician to pay no attention to her complaints, but to continue his treatment and he would pay him for his services, was liable for the physician's bill.³⁰

A person having been injured through accident on a boat of which "A" was captain, was brought by him to "B," a surgeon, then absent from his office, and was left there with instructions to give the injured person every attention. The wounds were dressed by "B" on his return and "A" was compelled to pay him for his services.³¹

The safest way to save all question when a third person desires to be responsible to you for your services is to have him put his promise to pay you in writing.

This is because in most of the states they have a statute known as the Statute of Frauds, of which one provision is generally the following: "No action shall be brought whereby to charge a person upon any promise to answer for the debt, default or miscarriage of another person, unless the agreement upon which the action is brought or some memorandum thereof shall be in writing and signed by the party to be charged therewith or some other person thereunto by him lawfully authorized."

Where a number of persons were injured in a railroad accident and the president of the company told them to employ whatever physician they chose and the company would pay the bill, it was decided that the physician employed by them, although they told him what the president had said, could not

³⁰ DeWitt v. Root, 18 Neb. 567.

³¹ Beery v. Pusey, 80 Ky. 166, 3 Ky. L. Rep. 656.

collect his bill from the railroad company.³² This was right, because an officer of a company only has power to bind the company by acts which are within the scope of his authority.

A physician cannot recover of a father for services rendered an adult daughter at her request, although she resides with him as a part of his family.³³

A husband is bound to furnish medical attendance for his wife and a father for his minor children. If, however, a wife is possessed of property and makes the contract herself for medical services, she can be made to pay therefor.

While a master is not bound, as a general rule, to furnish medical attendance for his servant or employe, yet if he employs the physician, he is liable as a father would be who employed a physician for an adult child.

§ 28. Last sickness—Paupers.—In most of the states the laws provide that the costs and expenses of the last sickness of a person are preferred debts. That is, they are entitled to be paid before the ordinary debts of the estate are paid.

The duration of the last sickness may be long or short, and no definite time can be fixed therefor. The last sickness is the sickness which terminates in death. Many persons die by suicide, accident, result of war and by law who do not have any last sickness, and others, again, may die as the result of the development of a disease with which they have been afflicted for years, as, for example, cancer. In ordinary cases it is easy to determine the duration of the last sickness, but in chronic cases much difficulty has been experienced. It is, however, now well settled that in such cases the last sickness dates from the time that the disease takes a turn for the worse, which condition continues until death.

In the absence of a statute on the subject, the costs and expenses of the last sickness have no preference over the ordinary debts of an individual.

In all states the care of the poor is usually lodged in some

³² Canney v. South Pacific R. R. Co., 63 Cal. 501.

³³ Blachley v. Laba, 63 Iowa 22, 50 Am. Rep. 724.

public body, such as the township trustees, and upon this body devolves the duty of caring for them in health and sickness. Laws have been enacted which, in general, provide that if any physician shall be called to render services for a pauper, he must report the case to the trustees for the poor within twenty-four or forty-eight hours or he forfeits all right to any compensation; and further, the provision is that the physician can only receive for his services whatever the trustees of the poor decide his services are worth. While this provision seems to be unfair, it was absolutely necessary in order to protect the public from exorbitant bills, and on that ground is defensible. Under such a provision the physician is bound to accept what the trustees allow him, and he has no redress.³⁴

³⁴ Trustees v. White, 48 Ohio St. 577.

CHAPTER V.

CORONERS—POST MORTEMS—WILLS.

§ 29. Coroners.
30. Post mortems.
31. Wills.

§ 32. Nuncupative wills—Physicians as witnesses to wills.

§ 29. Coroners.—One of the officers with whom a physician will frequently be brought in contact is the coroner, and as he is an important factor in the examination of all cases of death by violence, it will be well to understand what his duties are.

Although this is a very ancient office, the duties of the incumbent in this country are generally prescribed by statute.

In general, when the coroner is informed that the body of a person supposed to have died by violence has been found in his county, it is his duty to proceed at once to the place where the body is. A dead body is “found within a county” when it is ascertained to be in the county, and death is supposed to have been caused by violence whenever the coroner, from observation or information, has substantial reasons for believing or surmising that death was caused by unlawful means.¹ The body should not be removed until the coroner comes, as the minutest details are often of great importance in such cases. It is further his duty, upon his arrival, to view the body and subpoena such witnesses as he deems necessary, and after administering to them the proper oath, proceed to inquire into the cause of death; and if from violence, by whom, and whether as principals or accessories. In some states he is required to impanel a jury of the vicinity to hear the evidence and return a verdict stating cause of death and probable author of crime; in other states the coroner himself hears the evidence and makes his return to the proper authority of the cause of death, and, if by violence, as to the

¹ State v. Bellows, 62 Ohio St. 307, 15 Ohio Circuit Court 504.

probable author of the crime. All the testimony should be reduced to writing and signed by the witnesses, and, together with the finding of the jury or coroner, as the case may be, should be filed with the proper officer. As a part of his finding he should also give a description of the deceased, specifying name, age, sex, residence, place of nativity, color of the eyes and hair, all marks and everything else which may assist in the identification, and return the same to the proper officer.

As this testimony is filed away, and may at some future time be produced in court while the physician who made the post-mortem is testifying as to the occurrence, it is always important that he should be very careful to make thorough examinations, and in all cases when, in his judgment, a full post-mortem should be held, he ought not to permit it to be omitted. And as the rule will be, so long as the coroner is allowed to call what physician he wishes, that he will call to his assistance some physician because of his friendship for him, or confidence in his skill, or both, he will undoubtedly consent to a thorough post-mortem if the necessity of such a course is explained to him.

A physician called to assist at a post-mortem should write out his own notes and testimony, and not allow a bungling coroner or his assistant to do it, as such an investigation is often very important for many reasons.

Upon his testimony, embodying the result of his investigation, an innocent man may be subjected to unjust suspicion and perhaps punished unjustly, or a guilty one permitted to escape. Therefore he should do nothing hurriedly or without thorough examination. In one case where it was claimed that the deceased was drowned, it was only upon the third post-mortem that a bullet, which had entered the head through the opening in one of the ears, was found in the brain, and the murderer was subsequently convicted and executed.

He should express no opinions except as the facts warranting the same are disclosed.

The importance attaching to coroners' inquests is apparent to any one who will consider the subject for a moment, and it would naturally be supposed that great care would be exercised in selecting these officers, whether elective or appointive; where

the office is elective it too frequently happens that instead of being a medical man, as he ought always to be, he is very frequently an undertaker, the common understanding seeming to be that because he has to do with dead bodies, it is properly the place for an undertaker; or some man whom experience has shown to be unfitted for anything else. All the evils of such a system cannot be corrected at once, but when a physician is called by the coroner, he can minimize them by doing his whole duty.

Massachusetts and Connecticut and some of the other states have taken steps in the right direction by placing these inquests in the hands of medical men and judicial officers, who conduct the same, sitting as a court and acting under the forms of law, and submit every medical question to competent medical officers.

By the Massachusetts law the office of coroner is abolished and in each county the governor appoints a medical examiner or examiners, whose duty it is to make all inquests in cases formerly falling within the jurisdiction of the coroner. If he thinks it necessary and is authorized by the district attorney, mayor or selectmen he conducts an autopsy in the presence of two or more discreet persons, whom he has power to summon as witnesses. If he thinks a crime has been committed, he must report the same to the proper officer and also file a full statement of his autopsy. An examination and inquest is then held by the law authorities sitting as a court, and this may be public or private as they may determine, and they report whether or not a crime has been committed and who is the probable criminal; and upon this report being filed the accused, if in custody, is required to give bond for his appearance in the proper tribunal, and, if he is not in custody, process is issued for him. The results obtained under this law have been found to be very satisfactory, and, although at first it seemed more cumbersome than the old way, it has been proven by experience that the cost is one-third less than formerly.

In England the coroner is a judicial officer, and a medical man without legal knowledge is not qualified for the position. This is not very much of an improvement over our method. It is very easy to say that only properly qualified persons should be employed to make autopsies, but such persons are not easy to secure.

It is not easy in every community to find physicians who possess all the necessary qualifications, but in most localities there can be found those who approximate the standard. It has been suggested it might be devolved upon the prosecuting attorney to select and properly pay those who make such examinations, and then hold him responsible for the proper presentation of the cases to the courts, including the post-mortem examinations. If such was the law he should in no case employ fewer than two experts, and in very important cases three, giving them to understand that each is responsible for the whole examination, and that they will not only be paid for making the examination, but also fees as experts for testifying at the trial. It might be difficult to have this method adopted, for among other objections it might be said that it would be much more expensive than the present method; but, on the other hand, should be considered how much might be saved in this way in re-trials and trials on appeal, and this would show that in the end there would be a saving. As has been shown, Massachusetts furnishes a complete answer to this claim, notwithstanding the provisions for salaried medical examiners and for judicial examinations.

The truth is that there are few causes of death too subtle to be detected by post-mortem examinations, but the rule is that such examinations are made so imperfectly as rarely to furnish definite, trustworthy and conclusive evidence for the benefit of courts and juries. The laws of the various states are largely responsible for this, because they have not made the necessary provisions for the adequate compensation of those who make such examinations exhaustive and trustworthy, nor have they made the necessary provisions to enable the courts to adopt such modes of procedure as will secure the services of thoroughly competent and reliable experts to make such examinations.

§ 30. Post-mortems.—While the law lays down the duties of coroners, it nowhere has put into the form of a statute the duties of the physician or physicians called to his assistance. But they no less have duties which are increased by the fact of the ignorance or incompetency of the ordinary coroner.

When a physician is called upon to make an examination of a

person found dead under suspicious circumstances, a great responsibility rests upon him. While it is not the province of the physician to play the detective, it is his place under such circumstances to examine how the deceased came to his death and, as near as may be, when; to say with what kind of a weapon the fatal blow was inflicted, and whether that blow was necessarily and naturally fatal or not; whether the death was sudden or the dying protracted, and whether, from an examination of the various parts of the body, the blow was the immediate cause of the death or whether death was caused by something else. Not only these things must be carefully noted, but, if he arrives before the removal of the body—and he ought to be called so that he can—he should note the position of the body with regard to surrounding objects and all the noticeable points of the locality where it is found. It will be better for him to see the body before it is undressed, but where that is impossible he should examine carefully the clothing and *all* the clothing found on the body for marks, stains, etc. If the body has been removed, he should visit the locality and obtain as accurate a knowledge as possible of the position of the body and the appearance of surrounding objects at the time it was found. Where the clothing has not been removed from the body, he should examine it closely before removing it, and be very careful in removing it. The results of a struggle may, very frequently, be found in the clothing.

The chief object in examining the locality where a dead body is found is for the purpose of obtaining, if possible, a clue to the manner in which it came there. In case the body is that of an infant, its situation is often very important in determining the manner of its death. A person may be murdered and dragged or carried some distance from the scene of the crime for the purpose of concealment, or a wounded man may have pursued his assailant for some distance before falling dead.

The identity of the deceased can be sometimes determined from the clothing, stature, apparent age, physical developments, deformities, color of hair, eyes, etc.; by scars, tattoo marks, birth marks and peculiarities indicating his trade or occupation.

Traces of blood, hair and fragments of garments should be

sought for and, if found, carefully preserved; also all weapons, or anything that might have accidentally caused the death.

He should examine the hands of the deceased to see if anything is held therein, such as hair, grass or pieces of clothing; and if he holds any weapon, see whether it is held tightly or loosely; whether it is cocked or not, if it is a firearm, and the condition of the loads therein; if a knife or similar weapon, whether any stains are on it. Cases have been known where a weapon was put into the hands of the deceased in order to create the impression of suicide. Thus a man was found dead with his throat cut and an open razor in his right hand. It appeared to be a clear case of suicide until a closer investigation showed that the wound could not have been made by the deceased with the razor in his right hand. This led to further investigation, resulting in the arrest and conviction of the murderer.

In cases of poisoning he should see if he can find the vessel in which the poison was contained or into which it was emptied. The vial may be found in the hands or pockets of the deceased, about the bed or in the drawers or closets.

The inspection and post-mortem ought to be made with the assistance of at least one other physician.

If disinterment is necessary in any of these cases, the physician should have the body removed from the coffin in his presence. The extent to which decay has proceeded is not very material in cases of examinations for fractures of the bones or for poisons, and the internal organs are often in a great measure entire, even after decay has advanced very far in the external parts. Where the body is very much decayed, washing the parts with a solution of chloride of lime of the strength of one part in forty, it is said, will be found to be of great advantage; but in using this solution be very careful that none of it touches any part suspected of containing poison. The examination should be made wholly by daylight and every one excluded except the examiners, if possible, and especially any who are suspected of participation in the crime. While one physician is making the examination let the other take notes, and before closing the examination let these notes be read over so that any corrections or omissions may be noted at the time.

He should let *nothing* deter him from making a thorough investigation and should not be hasty in forming his judgment as to the cause of the death; he should wait until the examination is fully completed and he has taken time to examine fully his notes.

All wounds should be examined and circumscribed by making an incision so as to isolate them, and then their relations with the subjacent parts may be noted. If he finds any weapon in the vicinity, he should compare it with the wounds so as to be able to say whether they were caused by that weapon or not.

He should examine for fractures or dislocations and for the presence of any foreign substances in any of the natural openings of the body; in cases of females examine carefully the generative organs for any injuries.

He may be able to approximate the length of time since death by the rigidity or otherwise of the body and the extent of putrefaction.

In making an examination of the internal organs, authorities upon such subjects say that the examiner can work to the best advantage by beginning at the head. The quantity and character of the fluid in the pericardium demand especial attention.

Where there has been a gunshot or other wound in the substance of the pericardium, he should carefully examine its direction, extent and character, and search in the substance and in the cavities for any foreign bodies, such as balls, wadding or fragments of weapons.

When in the examination he has reached the abdomen, in cases of suspected poisoning, he should separate the stomach and duodenum with great care by double ligatures; then remove them from the body and put them in new, clear porcelain or glass vessels. He need not put any preservative liquid with them if he seals the vessels tightly. He should do this in such a manner as to disclose or prevent tampering; then label them with name and date and keep them in a secure place until they can be examined chemically. In many cases, especially of arsenical and mercurial poisoning, the liver must be preserved for chemical examination. In cases of suspected poisoning it is also essential that a chemical analysis be made of the matter vomited up by

the deceased, and such matter should be preserved by putting it in new, clean vessels and labeling it. He should never let the articles or matter get out of his sight during the chemical examination, and never lay them on anything but a perfectly clean table or slab.

Slight as these things may seem, yet in a case where a man's life is involved every straw is clutched at, and if the physician cannot say positively that the table, slab or vessel was perfectly clean, *immediately* it is suggested that the poison *might* have gotten in during his investigation. He should be careful in sealing up and marking everything, and as it is very essential that the identity of these organs and substances should never be a matter of doubt, it is always best to hermetically seal them; and while in his possession he should keep them locked up where no one can gain access to them without his knowledge.

Everything that he does is likely to come out in evidence, which should be an additional incentive, if he needs one, to do nothing slightlying or in any way that he is not perfectly willing all should know about.

In making the post-mortem the physician *must* not make *any* wounds in the internal organs, for there will hardly be a case of death from wounds in which a post-mortem has been held where it will not be suggested, if not insisted upon, that the wounds described may have been inflicted during the post-mortem, and a slight and apparently unimportant slip of the knife may change the course of justice and allow the guilty to escape.

The examiner's testimony is of such importance and the likelihood that some time may elapse before the trial of the case is so great that he should carefully make and file away full notes of the autopsy, in addition to those made for the coroner, so that he can readily find them when he has need to use them, as he ought always to read them over before giving his testimony.

While not required by law it is in the interests of justice that before the trial he place a copy of his notes in the hands of the prosecuting attorney, and thus enable him to make his examination of the medical witnesses intelligible and his cross-examination effective.

In writing out notes he should use ordinary language and

avoid as much as possible the use of technical terms, and, if he is prepared to do so, add his opinion as to the probable cause of death.

He should not attempt to make a chemical examination unless he feels that he is perfectly competent to do so and able to account for, explain and defend his methods of analysis and the conclusions at which he arrives. In all cases he should reserve sufficient material for future experiments by himself or others who may be called in to assist him.

He will be required in these investigations to use his judgment, as well as his eyes, and it is not always safe to conclude that, because a man has been found dead with a wound in his head, that he has been murdered.

Neither does it follow that, because he was struck before he fell, that the striker is guilty of murder; he may have fallen on such a substance or in such a way as to have thus received the fatal wound.

If the examination is thorough and properly made, the examiner ought to be able to answer intelligently whether the blow or the fall was the cause of the death.

Thus it will be seen that such an examination will call into service not only medical and surgical knowledge, but much more, and that it requires a very different and much more searching mode of procedure than that employed in cases of death from disease where the physicians are searching for the cause of the disease and to increase their knowledge of pathology.

Many instances may be found in which a post-mortem has failed to develop the facts, but two of them will suffice to illustrate the importance of great care in such cases.

A coroner having held a post-mortem, reported as the result of his investigation that the deceased died from natural causes and the man was buried. Some of his relatives, who were dissatisfied with this report, had the body exhumed and a second examination held. This resulted in the astounding discovery that the man had been murdered, and the bullet was found in his brain; the murderer had had time before the crime was discovered to plug up the bullet hole in such a way as to deceive the physicians holding the post-mortem.

In the other case the report of the post-mortem was also erroneous, but in exactly the opposite way.

In the vicinity of Detroit, Mich., there lived a family by the name of Knoch. The father was found one morning in his stable with a severe scalp wound and insensible. He died in a few hours without having recovered his sensibility and was supposed to have been killed by a kick from one of his horses. About three years afterwards one of the sons was found, as it was at first supposed, drowned, but examination of the body disclosed a bullet hole in his head, also a pump chain fastened around his body by a copper wire, which chain and wire were similar to other pieces found on the Knoch farm, but it was never determined whether it was a case of homicide or suicide. About four years afterwards the house of another son, containing himself, wife and two children, was burned to the ground, none of the inmates escaping. At the inquest it was found that the parents had been fatally shot, and it was then quite clear that a double if not a quadruple murder had been committed and the house fired to conceal the crime. Such an incident created naturally a great deal of excitement, which revived the reports of the former sudden deaths of the father and brother and raised grave suspicions against the surviving members of the family, who were the only ones apparently to be benefited by the deaths. While the excitement was at its height one of the newspapers announced that Mrs. Knoch had expressed the desire to see an officer, as *she wished to make a confession*; but on the arrival of the officer she was found *insensible* and died in a few hours. The officers now determined, if possible, to solve the mystery of these several sudden deaths in the same family, and as a first step ordered a post-mortem examination of the body of Mrs. Knoch. That examination was performed by the county physician, *in a small room, at night, and in a very imperfect light*. After concluding his examination, he stated in substance that Mrs. Knoch had been murdered; that he found a fracture of the skull reaching from the frontal sinus around to the base of the brain; that as there were no external contusions or abrasions on the surface, the skull had been fractured by a blow with a sandbag or some such weapon. As for several days before her death Mrs. Knoch

had been so ill as to be confined to her house and had been several times visited by a physician, and as her own family were supposed to have had exclusive care of her, suspicion was at once directed to the two remaining sons. The sheriff of the county, being informed of the result of the post-mortem late at night and that a full account of it would appear the next morning in the newspapers, took upon himself the responsibility of arresting the two sons without a warrant and locking them up in the county jail. He did this for two reasons: First, because in the state of public feeling he wanted to secure them against mob violence, and, second, that he might have them secure in case further evidence showed them probably guilty of a crime. So far there appeared no difficulty in the case, but some of the persons who were present at the autopsy having observed that considerable force was used with the hammer and chisel in removing the top of the skull, and also having overheard some remarks made by the county physician to his assistant student, were led to believe that the fracture of the skull, *which was the evidence of the murder*, was the result of the force used by the operator in making the autopsy. Having informed the prosecuting attorney of what they had seen and heard, he ordered a re-examination of the body to be made by three distinguished medical professors in the presence of the county physician, who had made the previous examination, and several other physicians, and the conclusion was unanimously reached by the professors that Mrs. Knoch died of pneumonia and that the fractures were post-mortem. One of the examining professors testified that he visited Mrs. Knoch the day before she died, and she then had pneumonia in such an advanced stage that, in his opinion, she had only a few hours to live.

The sons were of course promptly released, but it is terrible to think what might have been done to them by the excited populace, when the result of the first post-mortem was announced, if the sheriff had not taken them into his custody.

§ 31. Wills.—For the reason that physicians are not only frequently consulted in regard to the making of wills, but are often called as witnesses in courts of justice in the contest of wills, it

is not inappropriate to call attention in this place to the law governing the execution of wills.

A will is the disposition of one's property to take effect after death, and most men put off making their wills until that last moment comes when their physician is in duty bound to tell them that they must soon loose their hold upon terrestrial things, and that it is therefore important, if they have any business to transact, that it should be attended to at once. Then it is, at a time when they are or ought to be overwhelmed with the thought of impending dissolution, that they attempt the transaction of business oftentimes as important as any they have undertaken in the course of their lives, viz., the disposition of their property among those entitled to their bounty.

It is always best when a will is to be drawn, if there is time to do so, to advise the calling of a competent lawyer to do it. Indeed, it is always best, when a man has anything of importance to do, in order that his interests, as well as those of others, and his estate may be properly protected, to call upon a man who, by education and training, is skilled in the discharge of such duties; just as it is always best, when a man is sick, that he should place himself or be placed in the care of a physician.

In general, the law requires the following requisites for the execution of a valid will:

The maker of it must be of full age, of sound mind and memory and not under any restraint. What full age means depends upon the local statutes. In many states full age is twenty-one years for males and females; in others it is twenty-one for males and eighteen for females. A married woman has the same power to make a will as an unmarried woman or a man in states where she is given power to act as an unmarried woman.

The will should be (except in the case of nuncupative wills) in writing or typewritten, signed *at the end* by the maker or by some other signing his name in his presence, by his express direction. Under the common law it was a sufficient signing if the maker's name appeared anywhere in the will written by himself, but in most of the states of the United States it must be signed by or for him *at the end* of the will. A will signed with testator's mark is valid. It must also be attested and subscribed

in the presence of the maker by two or more competent witnesses, who either saw the maker sign it or heard him acknowledge that it was his will. Where a testator, at the time of the execution of his will, was lying upon his bed unable to move, with his sight unimpaired, but he could only look upward, and the witnesses signed the will at a table nine feet distant from him in another room, but with the door open and in the line of his vision if he had been able to look, and he could hear all that was said and knew and understood all that was done, and after the witnesses signed he read their names and said he was glad it was done, this was a signing and attesting in his presence.² All courts do not agree with this decision, but it is sound in principle and in accord with the weight of authority.

The usual way is for whoever calls in the witnesses, or for the maker to announce to the witnesses, that it is his will; and if this announcement is made by a person other than the maker, it should be made loud enough for the person making the will to hear it, and he should be capable of understanding what is said; and the witnesses should then obtain some word or intelligible sign from the maker of the will that it is his will, and that he wishes them to sign it as witnesses.³ Thus, where a testator cannot speak at all, or only with difficulty, he may communicate his knowledge by signs or words unintelligible to some listeners; but if he does it in a manner capable of conveying to the minds of the witnesses his own present consciousness that the paper being executed is his will, it is sufficient.⁴ Unless expressly required by law, the witnesses are not required to sign in the presence of each other.

Although a will ought to be written with pen and ink and on paper, it may legally be written with a pencil and on any material.

In some of the states it is the law that any person who has children cannot make a will devising or bequeathing *any part* of his estate to any benevolent, religious, educational or charitable purpose, or to any state or country, or to any county, city, village

² Riggs v. Riggs, 135 Mass. 238, 46 Am. Rep. 464.

³ Haynes v. Haynes, 33 Ohio St. 598, 31 Am. Rep. 579.

⁴ In re Beckett, 103 N. Y. 167, 8 N. E. 506.

or other corporation or association, or to any person in trust for any such purpose, unless his will is executed according to law at least *one year* prior to his death.

Any person who receives a benefit under a will is not competent to be a witness to such will. If, however, such a person is a witness to such will and the will cannot be proven without his testimony, then in order that the will may stand the bequest to him becomes void; but if under the laws regulating the inheritance of property he would be entitled to anything as an heir of the maker of the will, if no will had been made, he will receive such part of the estate if that does not exceed the amount given him by the will.

In some of the states there is no legal objection to a man making a will which cuts off all or any of his children from any participation in his estate or which divides it very unequally among them, but in others the law requires that some provision be made for every child or the will is void.

It is the physician's *duty* to prevent the making of a will if his patient is not of sound mind and memory or is not free from restraint, and therefore it is important to know the legal meaning of those terms, in order that he may know when and under what circumstances he should perform this duty.

By saying that the maker of a will has "a sound mind and memory" is meant that he is able to make his will with an understanding of the nature of the business in which he is engaged, such as a recollection of the property he means to dispose of, of the persons who are or might reasonably be the objects of his bounty, and the manner in which it is to be distributed among them. It is not necessary that he should view his will with the eye of a lawyer and comprehend its provisions in their legal form; nor that he should have a perfect mind; nor one equal or superior to the common run of minds; nor that his mind should be as strong as it has been at some other time. It is sufficient if he has such a mind and memory as will enable him to understand the elements of which the will is composed—the disposition of his property in its simple forms. Not that the powers of his mind must not have been weakened or impaired by disease or other causes, nor that he should have such a mental

capacity as would be necessary to transact the most complex and intricate business, but only such a degree of strength and clearness of mind and memory as would enable him to understand the nature of the business in which he is engaged; to recollect his property and the persons who come reasonably within the range of his bounty, and to understand how and in what manner he is distributing his estate among them so far as he wishes to do so. In short, it is sufficient if he understands what he is about, even if he has less mental capacity than would be required to make a contract.

The existence in the mind of a testator of mere delusions which do not affect either the natural or selected objects of his bounty is not inconsistent with testamentary capacity.⁵

If the will is made by a dying person, occasional flightiness or wandering of intellect will not be considered more than as very slight evidence of want of capacity to make a will. Nor must the physician confuse the legal signification of unsound mind with the medical signification. All cases of diseases of the body in some degree affect the mind and thus render it, technically and medically speaking, unsound, but it does not follow that the patient is therefore incapacitated from transacting ordinary business.⁶

Of course, an idiot is incapable of making a will.

The most of the cases which have been reported involving the degree of capacity necessary to make a will may be grouped in three classes. In the first are those which proceed upon the notion that no man is incapable of making a will unless he is absolutely insane. In the second class are found those cases which proceed upon the theory that soundness of mind is determined by the test of ordinary business sagacity. And in the third class are found those which require of a person making the will the possession of certain specified qualifications, the absence of any one of which incapacitates.

Nobody would claim that a raving maniac or a person in the delirium of disease would be any more capable of making a will

⁵ Church v. Crocker, 7 Ohio C. C. 327, 334.

⁶ Freeman v. Easley, 117 Ill. 317, 7 N. E. 656, 658; Bice v. Hall, 120 Ill. 597, 12 N. E. 236.

than an idiot, but there are certain conditions in what might be called the border land which are worthy of attention. Insane delusions will render a will void. But not all delusions are insane, and in testing them in connection with the question of testamentary capacity it is necessary to consider the act in all its bearings and judge of the soundness of the mind of the person making the will by his conduct and declarations at the time and as connected with his previous insanity and the degree of restoration of his mind in the interval; and if the erroneous and groundless impressions received during his delirium retain their hold (whether by some physical derangement of the brain or by some indelible stamp on the thinking faculties), that person must be considered insane and still under a delusion; the effect continues, and it is only by effects that we can judge of the exciting cause. If he is under a delusion, though only *partially* insane, which relates to the act in question, it is well settled that it will defeat a will which is shown to be the direct offspring of such delusion. Thus a delusion in regard to a child, having no foundation except in the disordered imagination of the father, and which evidently caused the making of the will as it was made, will render a will void.

Although mere moral depravity does not of itself unfit a man to make a will, yet a jury may consider it as a circumstance casting suspicion upon his soundness of mind. And as illustrating the moral depravity of which a mind may become capable and which a court would consider as conclusive evidence of unsoundness of mind, I quote from the decision made in a will case the following, which contains a statement of the facts in the case and the views of the court thereon: “Where a testator believes that all women are prostitutes and were created simply to gratify the lusts of man, and were therefore able to support themselves out of the wages of sin, and therefore that no provision ought to be made for them, and, acting on such belief, left the bulk of his property to his son and nothing to his daughters, this would justify the jury in finding that his will should be set aside.”⁷

But eccentricities of conduct, absurd opinions and a belief in

⁷ *Joslyn v. Sedan*, 2 Ohio Law Bul. 147.

things which to other persons may seem absurd do not necessarily establish testamentary incapacity. Thus, it has been decided that a man may believe in witches and witchcraft and all kinds of magic and clairvoyance and yet be perfectly competent to make a will. But such belief, in connection with other evidence, and even from the provisions of the will itself, might justify setting it aside.

A person who is affected by monomania, which by some has been called partial insanity, although sensible and prudent on subjects and occasions other than those upon which his infirmity is commonly displayed, is not capable of making a will, if his monomania relates to the object or objects of his bounty. When insane delusions are shown to have existed, that circumstance would throw distrust upon a will executed by a person subject to them. Very naturally the question would suggest itself as to whether or not they may not have spread so as to govern all the person's actions; especially would this suspicion arise if the will itself was unjust or unnatural.

But where can be found a man who has not had his delusions? The great and learned Dr. Samuel Johnson firmly believed that he heard his dead mother's voice frequently calling him by name, and nothing could shake that belief. Napoleon firmly believed he was guided by the preternatural vision of a star.

Although such or similar delusions may be incompatible with entire sanity, yet they may exist in a mind which has sufficient intelligence to be able to make a valid will in respect to all subjects untouched by the delusions.⁵

Wherever continuous and chronic insanity is shown to exist, this is not incompatible with the presumption of a lucid interval or intervals in which the patient may transact any kind of business. But to establish this lucid interval it is not only necessary to show a cessation of the more violent symptoms of the disease, but a restoration of the faculties at the very time of making the will; but not necessarily so entirely as the patient originally possessed them; a rational act done in a rational way is one of the strongest proofs of a lucid interval.

Drunkenness, unless so complete as to destroy the victim's

capacity to understand what he is doing, will not invalidate his will.

What is meant when we say the maker of a will is “free from restraint” has been variously explained. Whatever destroys the free agency is “restraint.” All overpowering influence, whether of affection or fear, love or dread, becomes irresistible, from the fact that it absorbs and swallows up the will and thus virtually intrudes another person’s purpose into the purposes of the testator, and so, in effect, destroys his personal independence and virtually his identity. Honest endeavor, importunate solicitation for remembrance in a will by a wife or child is not necessarily undue influence.⁸ In all cases of this kind the validity of the testamentary act will depend more upon the abuse of a controlling influence than on the fact of its existence; more upon the fact that the testator was not fairly dealt with, and not left free to pursue his own natural and healthful instincts and reasonable duties than that the person benefited had the power to control his will.

The law *presumes* undue influence where a patient makes a will in favor of his physician, a client in favor of his lawyer, a ward in favor of his guardian, a person in favor of his priest or religious adviser; and where other close confidential relationship exists the wills are viewed with great suspicion by the law and some proof besides the making of the will is required. Indeed, the fact of undue influence is often gathered from all the circumstances surrounding the donor; his health, age and mental condition; how far he was dependent upon and subject to the control of the person benefited; the opportunity which the latter had to exercise his influence, and the disposition of the donor to be subject to it.⁹

A person making a will should possess the power to withstand *all contradiction* and control. And whatever will destroy his free agency will not only invalidate the will as to the person exercising the undue influence, but the *whole* will. In short, it must be the *will* of *him* who makes it and not of *some one else*.

⁸ *Sturtevant v. Sturtevant*, 116 Ill. 340, 6 N. E. 428.

⁹ *Woodbury v. Woodbury*, 141 Mass. 329, 5 N. E. 275, 55 Am. 479n, and cases cited.

Thus it was held in one case that where the proof showed that the testator was otherwise of sound mind, but that he was married to a spiritualistic medium who was shown to have great influence over him, by reason of her claiming to be the medium of communication between him and his first wife, and who received the bulk of his estate, a jury might reasonably infer that the will was procured by undue influence.¹⁰

The unscrupulous and crafty are always quick to take any advantage for their own benefit and never hesitate, if occasion offers, to bend the will of the infirm or weak to their own purposes.

§ 32. Nuncupative wills—Physicians as witnesses to wills.—
In very ancient times all wills were what are called nuncupative, or unwritten, being, as the word means, publicly declared. As, however, knowledge increased wills were required to be reduced to writing, except that sailors at sea and soldiers in actual military service were permitted to make nuncupative wills. Unless there exists a special statutory provision on the subject, this rule will apply in this country.

Where the statutes of a state permit the making of a nuncupative will the usual provisions are that the maker must be of full age, of sound mind and memory and not under any restraint; it must be made in the last sickness and can only relate to personal property; the maker of it must call two or more competent persons to witness that he makes this as his will, and what he says must be written out and attested by the witnesses within a short time after spoken, and within a short time after death filed for probate.

Although this is the law in regard to the making of verbal wills, it is best never to allow one to be made unless in a great extremity. The uncertainty of memory, and especially the likelihood of something being forgotten at such a time, make such attempts at testamentary disposition productive of bad results.

Besides all this, the fact that generally the statutes in regard to the descent and distribution of property are very equitable

¹⁰ Baylies Exr. v. Spaulding, 6 N. E. (Mass.) 62; Orchardson v. Cofield, 171 Ill. 14, 49 N. E. 197, 40 L. R. A. 256, 63 A. S. R. 211.

and just, much more so than most wills are, should lead a physician to regard it as a duty to say to his patient (unless there are peculiar circumstances in his case) that he ought not to disturb his last moments by an attempt to dispose of his property by will. He cannot by his will please everybody, and at a time when he needs rest and quiet, why attempt such a thankless task? A will should be made when a man or woman is in the full possession of his or her faculties, in health and strength. It sometimes happens that a will ought to be made to prevent injustice being done, or the property wasted, but it has been neglected because of the feeling that some other time than the present would do just as well. When such an exigency arises it is the physician's duty to give the patient and his friends ample notice of his condition, so that all necessary preparations may be made. He should not hesitate because death is near. There are men so constituted, and perhaps they are the rule rather than the exception, that in their last moments the faculties are clear and the mind bright, like the flaming up of a candle before it finally dies out.

If a will is made in the last sickness, another duty devolving upon the physician—and a serious one it is, too—is to know whether or not his patient is fitted, as I have told you he should be, to make disposition of his property, and, if need be, to protect him from his rapacious relatives or attendants, and to see, if possible, that what is written is the will of the testator and not of somebody else.

A good test for a physician to employ is to request the maker of the will to give him a statement of his property and the persons to whom he has given it and in what proportions.

Physicians are frequently called upon to sign as witnesses to a will, and before doing so they ought to be thoroughly satisfied that the testator is of sound mind and not under restraint, for their names to the will as witnesses are a declaration to the world as broad and comprehensive as that. At such a time and place it would be well to call to mind what that learned lawyer and judge, Chancellor Walworth, has said:¹¹ "That no person is

¹¹ Scribner v. Crane, 2 Paige (N. Y.) 147, 149, 21 Am. Dec. 81n.

justified in putting his name as subcribing witness to a will unless he knows from the testator himself that he understands what he is doing. The witness should also be satisfied from his own knowledge of the state of the testator's mental capacity that he is of sound and disposing mind and memory. By placing his name to the instrument the witness, in effect, certifies to his knowledge of the mental capacity of the testator, and that the will was executed by him freely and understandingly, with a full knowledge of its contents. Such is the legal effect of the signature of the witness when he is dead or is out of the jurisdiction of the court."

He should remember that his testimony is necessary in order that the will may be probated. In order that the will may be admitted to probate—and it cannot become effective unless admitted to probate—the witnesses to the will are not only required to testify as to the testator's signature, but also that he was of full age, of sound mind and not under any restraint. As a physician is regarded as especially able to determine all these matters intelligently, he should not attach his name to a will unless he is sure that they are true. Not believing all of them to be true, he should refuse to attach his name as a witness and thus certify to what he knows to be false.

In jurisdictions where a patient may waive the privilege which the law places upon communications between physician and patient it has been held that a patient, by calling upon his physician to attest his will, waives the privilege and the physician may testify as to his mental condition.¹²

¹² *In re Mullin*, 110 Cal. 252; *In the matter of Coleman*, 111 N. Y. 220; *Alberti v. N. Y. & L. C. R. R.*, 118 N. Y. 77, 85.

CHAPTER VI.

FEIGNED AND DISQUALIFYING DISEASES—IMPOTENCE AND STERILITY—DOUBTFUL SEX—AGE AND IDENTITY.

§ 33. Subjects to be treated.	§ 37. Impotence—Defense to crime—Cause for divorce.
34. Feigned diseases.	38. Doubtful sex.
35. Disqualifying diseases.	39. Age and identity.
36. Impotence and sterility.	

§ 33. **Subjects to be treated.**—Having in the previous chapters discussed all questions and subjects which are properly preliminary, I come now to consider those subjects usually treated of in works on Medical Jurisprudence.

The following list of subjects shows the vast field which this subject offers for investigation, and also shows the number and variety of subjects upon or about which physicians are supposed to be at all times prepared to testify; that they are not always prepared is lamentably true, and that they are not experts upon all the subjects is not surprising.

Each of the following subjects with others will be treated of in this volume at such length or with such brevity as their relative importance demands:

I.	Feigned Diseases.	XII.	Superfœtation.
II.	Disqualifying Diseases.	XIII.	Infanticide.
III.	Impotence and Sterility.	XIV.	Criminal Abortion.
IV.	Doubtful Sex.	XV.	Presumption of Survivorship.
V.	Age and Identity.	XVI.	Life Insurance.
VI.	Rape.	XVII.	Malpractice.
VII.	Crimes against Nature.	XVIII.	Wounds.
VIII.	Pregnancy.	XIX.	Death from Asphyxia and Lightning.
IX.	Delivery.	XX.	Blood Stains.
X.	The Cæsarian Operation.	XXI.	Insanity.
XI.	Legitimacy.	XXII.	Poisons.

Among these different subjects, there are some of great importance and some deserving and requiring but very little time

in the investigation thereof, and all of them may be embraced in the three general divisions so admirably marked out by Dr. Gordon Smith, viz.:

- I. Questions that regard the extinction of life.
- II. Questions arising from injuries done to the person, not leading to the extinction of life.
- III. Disqualifications for the discharge of social or civil functions.

§ 34. Feigned diseases.—In this age, owing to the increased knowledge of the physician, the surgeon and the chemist, the great improvements in surgical instruments, and the growing and constant use of such instruments, it is very difficult to deceive the practiced physician.

More than this, as most of the feigned diseases were caused by a desire to avoid conscription or escape military service, in this country, where the term of military service is only for five (5) years and not for life, as in the British army, the inducements to feign diseases are almost entirely wanting.

All the motives for feigning disease will be found in one or the other of the following classes:

1. A desire to be released from obligations.
2. The hope of gain.
3. A desire to obtain release from confinement or punishment.
4. A desire to obtain sympathy or notoriety, if in this last class there can be found a motive and the moving cause is not insanity.

Further than this, those who feign diseases are members of certain classes in society, and the names of those classes are:

1. Soldiers, who, when feigning disease, are called “malingers.”
2. Sailors, who are called “skulkers.”
3. Slaves and serfs.
4. Prisoners, who desire to escape work or get an easy position.
5. Those who have received injuries and desire to exaggerate them in the hope of gain.
6. Young persons desirous of escaping the confinement of the school room.

7. Mendicants, to excite pity and thus obtain alms.

In order to treat the cases coming within the range of your practice and to be able to detect the impostor, it must be borne in mind, among other things, that:—

Diseases may be simulated—exaggerated—intentionally or artificially exaggerated and artificially excited. In some cases the disease itself may be actually present, but only in a mild form, and in others not present at all. As Caspar properly remarks: “This simulation of disease is sometimes carried out by a purely mental effort, as by cunning, lying, or mimicry; in others by the aid of material means of various kinds, such as crutches, bandages, trusses, cutting instruments, spectacles, etc.” All such cases of pretended disease are termed *fictitious* by Dr. Ogston. There is another class which are actually produced by the patient at his convenience, or at least are exaggerations of some trivial complaint; these are named *factitious* by the same authority.

It is not necessary to cite from the books a multitude of examples of feigned diseases, for what will arouse suspicion or lead to detection in one case will not in another.

The books are full of examples, with descriptions of the methods by which each was detected given at the same time. But a few examples will illustrate the subject.

A man was severely injured, or appeared to be so, in a railroad accident. His physician reported that his spine was injured and that his injury would be permanent. The railroad company sent a physician to examine him and he reported that undoubtedly his spine was injured. At the trial he was brought into the court room on a couch and gave his testimony while in a recumbent position. The verdict of the jury was paid by the railway company and the man disappeared, to reappear in a distant part of the country successfully running a farm and entirely recovered. This case arose some years before the disease known as railway spine had been studied and its eccentricities developed.

The civil war furnished many malingerers. One morning a soldier came into the tent of the examining surgeon with one of his arms bent double, and he said he could not unbend it.

Examining and testing it, the surgeon found it would not yield to pressure and so told him he could not remain in service with his arm in that condition. The soldier put on an injured look and begged him to do something for him, so that he need not be discharged, as "he wanted to serve his country in her time of need." Something in the man's manner or his way of saying what he did aroused the surgeon's suspicions and he told him that he would try and do something for him, and, turning to his assistant, told him to bring him a bottle of chloroform. In answer to the soldier's inquiries he told him that he was about to perform an operation on his arm, which he was satisfied would restore it like the other, but, as it might be painful, he deemed it best to give him chloroform. As soon as he was completely under the influence of the anaesthetic his doubled-up arm dropped to his side as naturally as the other, thus showing the deception. When he recovered consciousness he raised up, doubled up his arm again and said: "Where am I? What have you done to my arm?" The surgeon told him that he had entirely cured his arm and would see to it that he was sent immediately to the front that he might serve his country to the best advantage.

A visitor to India, while viewing the evolutions of a company of British artillerymen, heard one of them called "Cupboard Crabb." Asking the meaning of the singular nickname, he was told that when Crabb first came to India he became very homesick, and in order to obtain his discharge reported to the surgeon that he was troubled with severe pains in his back and was compelled to walk stooped over; that it was impossible for him to straighten himself. The surgeon, after a thorough investigation, came to the conclusion that the man was feigning, and so ordered that all his meals should be served upon a shelf in a cupboard in his quarters, which it was impossible for him to reach without straightening his back. This soon revealed the deception, and, although there was no further attempt at malingering, he bore the nickname as long as he was in India.

A woman whose arm had been injured in a collision testified that since the accident she had not been able to lift her hand above her head. On cross-examination she was asked how high

she could lift her hand before the accident. She said, "As high as this," stretching her arm out full length. It didn't need an argument to dispose of that case.

In a large factory in which were employed several hundred persons, one of the workmen, in wielding his hammer, carelessly allowed it to slip from his hand. It flew half way across the room and struck a fellow-workman in the left eye. This man claimed that his eye was blinded by the blow, although a careful examination failed to reveal any injury, there being not a scratch visible. He brought a suit in the courts for compensation for the loss of half of his eyesight and refused all offers of a compromise. Under the law the owner of the factory was responsible for an injury resulting from an accident of this kind, and, although he believed that the man was shamming, and that the whole case was an attempt at swindling, he had about made up his mind that he would be compelled to pay the claim.

The day of trial arrived, and in open court an eminent oculist, retained by the defense, examined the alleged injured member and gave it as his opinion that it was in as good a condition as the right eye. Upon the plaintiff's loud protest of his inability to see with his left eye, the oculist proved him to be a perjurer and satisfied the court and jury of the falsity of the claim.

And how do you suppose he did it? Why, simply by knowing that the colors green and red combined make black. He procured a black card on which a few words were written with green ink. Then the plaintiff was ordered to put on a pair of spectacles with two different glasses, the one for the right eye being red and the one for the left eye consisting of ordinary glass. Then the card was handed to him and he was ordered to read the writing on it. This he did without hesitation, and the cheat at once was exposed.

The sound right eye, fitted with the red glass, was unable to distinguish the green writing on the black surface of the card, while the left eye, which was claimed to be sightless, was the one with which the reading had to be done.

Two gentlemen riding along in a sleigh somewhere in the state of Vermont were startled by seeing a man lying alongside

of the road, with blood on his face and clothes and on the snow around him. They stopped as soon as they came alongside of him, and, having aroused him with some difficulty, learned that he was on his way to his family and was walking because he had no money. He had succeeded in getting thus far on his journey when he had a hemorrhage of the lungs and fell by the side of the road and became unconscious. He was taken in the sleigh, carried to the next town and money given him to assist him in reaching his family, and the two gentlemen pursued their own journey. But when, during the next few weeks, it became quite common to find men by the roadside who had had a hemorrhage of the lungs and had run out of money, etc., etc., it became apparent to every one that the very simple trick of simulating a hemorrhage had been perpetrated upon the good-hearted travelers for the money there might be in it.

Dr. C. J. Collingsworth, a student of this subject, warns physicians against the danger of exaggerating injuries received in railroad accidents. He says that passengers seem to consider a railroad company as legitimate prey, and men who in the ordinary walks of life are considered upright and honorable seem to lose their bump of truthfulness and think it no ways wrong to exaggerate their injuries. This want of honesty, he says, is apt to become infectious and communicate itself to the medical attendant, if he is not careful to remember that the exaggeration of an injury is only different in degree from fabricating one. And then he relates this most singular case of a simulated injury:

On May 5, 1883, an accident occurred to an excursion train near Grimsby, in Lincolnshire. Three days subsequently a middle-aged laborer, named John Fox, sent in a claim for £500 as compensation for personal injuries alleged to have been received during that accident. Shortly afterwards he commenced an action against the company for the recovery of the amount claimed, and in the month of December he furnished the following particulars, in writing, of the injuries alleged to have been received:

1. Shock to nervous system.
2. Wasting of muscular tissue and consequent muscular debility, with marked loss of body weight.

3. Impairment of vision, with irregularity of pupils.
4. Impairment of hearing.
5. Loss of memory and sleeplessness; nervous irritability.
6. Headache (constant); vertigo.
7. Epileptiform seizures.
8. Incontinence of urine (late symptom).
9. Spinal tenderness, specially marked in the dorsal and lumbar regions, with vague pains about the right shoulder and chest.
10. Urine of low specific gravity (free from albumen and sugar).
11. Impaired muscular co-ordination.
12. Abnormal sensations in various parts of the body.
13. The above symptoms all progressive.
14. The injuries probably permanent.
15. The plaintiff was unable to drink his usual allowance of beer (moderate) on account of aggravating these nervous symptoms.

The plaintiff was a very ignorant man and could neither read nor write. It was plain that he must have had the assistance of some physician or a person who had a medical education in drawing up the lengthy document.

On December 14, he was examined by the company's medical officer, in the presence of three other medical men, including his own medical attendant. It was then ascertained that there was no evidence either of wasting, or of muscular inco-ordination or of loss of muscular power or incontinence of urine. The right pupil was dilated and inactive, and an ophthalmoscopic examination revealed extensive disease of the choroid of the right eye. The man admitted that his sight had been failing for three or four years. No satisfactory account could be obtained of any epileptiform seizures and the description given of the subjective symptoms was altogether contradictory. On receiving the medical officers' report the company instituted further inquiries, and obtained permission to put certain questions to the plaintiff. In answer to these, the plaintiff swore to an affidavit alleging, among other things, that he was a passenger on the train at the time of the accident. When the case came

on for trial, he did not appear and judgment was given for the company. He was immediately arrested for perjury, and on his trial in November, 1884, it was proven not only that he was not a passenger on the train, but was not on the day of the accident near the place where it occurred.¹

It is very difficult to feign deaf mutism, and yet Victor Travanaït succeeded for four years in eluding the closest scrutiny exercised upon him throughout Europe. He was at last exposed by the celebrated Sicard, of Paris, who, from some peculiarity in his hand-writing or spelling declared that he must have heard the words he was writing, pronounced. Edward Pope made a living for a number of years by having his neck broken in railway accidents. William Doran, who was known among his circus associates as the human rubber ball, swindled the railway companies by throwing himself in front of cars, and when struck, grasped the fenders, and while apparently in great danger, was able to protect himself from real injury. But the Salvation Army lassie who was made deaf and dumb and paralyzed by a street car accident and who played the part successfully through the trial for damages, was not able to convince a jury that she was suddenly healed by a miracle when the railway detectives discovered that she could hear and talk and had the full use of her limbs, and she went to the penitentiary.

Mrs. Mary Freeman and her daughters, Fanny and Jennie, for a long time succeeded in swindling various railroad companies by the scheme of having one of the daughters feign paralysis, alleged to be due to a railroad accident, while the mother interviewed the officials of the road alleged to be at fault and figured on a liberal settlement.

At last one of the railroad companies employed detectives to watch this family, and here is what was discovered: At 10:25 Fanny was sitting in a chair before the stove. At 10:30 o'clock there was a knock at the door, and Fanny, the paralytic, nimbly jumped into bed. The doctors entered and were received by Jennie. In five minutes Mrs. Freeman entered and asked if the

¹ 3 Med. Leg. Jour. 175.

doctors wanted to make an examination. They said they did. Under pretense of rearranging the bed Mrs. Freeman sent the doctors into the front room. The door was closed on them and a little girl was put on guard. No sooner were things safe than the "paralytic" jumped from the bed and sat on a chair. Jennie came in with a bucket of water, into which the "paralytic" put both feet. She then rinsed her hands and face in the water, dried herself on the bedclothes, and again became "paralyzed." The doctors were then admitted. Dr. Middleton noticed the coldness of the girl's feet and commented on it.

"Yes, doctor," said the mother, "they are always like that. I have had hot bottles to her feet all the time, and I can't get them warm."

The doctors tested the muscles of the feet and legs. Needles were shoved far into her flesh from feet to waist, and she never flinched until the line of paralysis, as she called it, was reached. Dr. Middleton raised one paralyzed leg in the air, and, to their astonishment, it stayed there.

"That," said the doctor, "is the strangest thing I ever saw."

Behind the doctors, Jennie was shaking her head vigorously at the invalid, but she still kept her leg up. The other leg exhibited the same peculiarity. The arrest of the family followed.

But with all the deceptions practiced in feigning diseases, either from fear, shame, or the hope of gain, be very careful not to judge a case too hastily. Remember that nearly all who feign disease or injury are really in some one way or another ill. Not necessarily of the disease they are feigning, but of some disease; that the difficulties of detecting the deception are best overcome by a comprehensive knowledge of the symptoms and attendants of the real disease, and by as full a knowledge as possible of the patient's previous character and possible motives; and that the improvements in the instruments used in the medical profession, and in the apparatus of the chemist render detection much easier than formerly. But while bearing all these things in mind, never forget that it is always better to accept the patient's statements as true and thus be deceived than to run the risk of neglecting a man who is really sick.

The classes of disease most easily feigned are:

- 1st. Those which are obvious to the senses.
- 2d. Those not obvious to the senses, but dependent upon the description given by the patient.
- 3d. Those which consist of a group of symptoms.

Furthermore, do not be satisfied that a man is not feigning solely because there is an absence or an apparent absence of motive for simulation, for this is not always a determining reason. Some of the most persistent cases of feigned diseases reported in the books have been characterized by an apparent absence of any motive.

Often the deception may be revealed by a knowledge of the patient's former life and character; whether he has had other similar attacks or has been guilty of attempted deception in other matters. When there is reason to suspect deception, compare the disease at all points with the real disease; keep a strict watch on the patient, at times and by persons he does not suspect; treat him as if he were really sick with the disease, and find out whether or not he is anxious to take the remedies prescribed; isolate him as much as possible, and if the disease is external, isolate the diseased part so that the patient cannot get at it. Talk in his presence about his disease or injury, and notice his appearance and actions very closely. Take his pulse and make examinations when he does not expect it. In short, without allowing the patient to suspect, until fully satisfied he is shamming, do not allow him an opportunity, after he becomes a patient, to do anything when he can not be detected.

The important subject of feigned insanity is treated of in section 163.

§ 35. Disqualifying diseases.—Disqualifying diseases are not very frequently met with in an ordinary practice, as questions concerning them mostly arise among army surgeons and in reference to a man's qualifications for entering or remaining in the army or navy. The rules applied to the examination of feigned diseases would be applicable in such examinations. A physician in making such examinations should learn all he possibly can in regard to the patient's former life, habits and

ancestry; should insist upon his stripping for examination, walking, running and exercising in his presence, if such tests are deemed necessary.

There may be, however, cases in civil life where a physician may be called upon to say whether a man is able to sit on a jury, attend as a witness, or perform some other public duty; or whether a criminal is physically able to undergo the punishment about to be administered to him. He may also be called upon to testify as to whether or not a man is in a fit condition to be examined as a witness, for there are, as you know, certain diseases, the presence of which would require that the person should not be subjected to irritating or disturbing scenes or associations.

Having made his examination he must not feel that he has been called for the purpose of finding a disqualification whether any exists or not, but rather let him remember that he is called in order that the truth may be known, and he should not hesitate to tell the "truth, the whole truth and nothing but the truth." But in avoiding this error he should not fall into another and very common one, and which has been referred to before. That is the duty which he owes to the party who expects to use him as a witness, and to himself as well, of telling him substantially what his testimony will be. If it is unfavorable, he may not be called upon to give it, and he may be the means of settling a threatened litigation.

When the statement in regard to this disqualifying disease is made, whether in writing or orally, let it be full and to the point. Particularize the disease with its general symptoms and effects; the nature and probable duration of the disqualification, in plain language and without any attempt to lecture on medicine generally or this disease in particular.

Upon the result of this examination may depend the progress or delay of the business of the courts, the punishment of the guilty or the lenient treatment of one, who though guilty of crime, is yet a human being.

§ 36. Impotence and sterility.—It is not necessary in a work of this kind to describe or even enumerate the various diseases, malformations or accidents causing impotence or sterility, but

merely call attention to some of the legal controversies in which questions of impotence or sterility may be vital to the parties engaged.

These words mean, in reality, the same thing, but in using them we generally speak of a man as being impotent and a woman as being sterile.

There are many causes of impotency, but the ones most frequently requiring adjudication are those of want of age or too great age. In considering these causes it is well to remember that no inflexible time can be fixed at which a man becomes possessed of the power of propagating his kind nor does the law declare there is any age beyond which a man can not become a father. There always exists, however, the presumption that a mature male has normal powers of virility, and the burden of proving the contrary is on the party asserting it.²

Such questions arise in cases involving the inheritance of estates and the legitimacy of children most frequently, and are often of great importance. If in any case the physician is inclined to be hasty in arriving at conclusions, let him stop long enough to remember that Parr is said to have been a father at the age of one hundred and forty years; and he was not one of the patriarchs, either. A doubt is better solved in favor of legitimacy, for the good of society in general and the claimant in general. In such cases, much assistance may be obtained from a knowledge of the previous life and habits of husband and wife and their associates; the disparity or otherwise in their ages.

§ 37. Impotence—Defense to crime—Cause for divorce.—It is not the policy of the law to allow husband or wife to prove non-access where the possibility of access exists, and in Scotland the law formerly was that non-access could not be proved if husband and wife have been within the “four seas of the realm” that is within the jurisdiction of England.

Impotence may be absolute or curable, accidental or tempo-

² *Gardner v. State* (Ga.), 7 S. E. 144.

rary, and may depend upon functional or organic causes. In cases of rape the claim of impotency is often made by the defendant, especially in those states or countries where both penetration and emission are necessary to constitute this crime. In some states, however, proof of penetration is all that is required, and therefore this defense would not be as available, except as incapacity to penetrate could be shown. Strictly speaking, the man may be sterile without being impotent, as is seen in cases after castration, and in some cases where there are no testes in the scrotum; or he may be impotent without being sterile, as where intercourse is prevented by physical malformation, although the testes may secrete healthy semen. Again, the female may be unfruitful without being incapable of intercourse, or *vice versa*. It is also well established that women may be sterile with one man and capable of conceiving with another. An example of this is found in the well-known case of Napoleon and Josephine. She was a widow with children when they were married, and one of the prime causes of their separation was her barrenness. Napoleon married again and had a child.

In some states impotency is a cause for divorce, and it depends upon the laws of each state whether it is necessary to prove that the impotency existed at the time of the marriage. If the sexual intercourse between husband and wife is not ordinary and complete, then impotency such as would warrant the dissolution of the marriage exists, but mere lack of power of conception does not fall within the meaning of the term as used in the law.

In such a case there should be no delay in bringing the suit; a medical examination is necessary, but as a general rule a court cannot compel either party to submit to an examination. The mere fact of the refusal by one of the parties to submit to an examination would doubtless have some weight with the court.

A mere unwillingness to submit to sexual intercourse on the part of the wife, what the law calls a "frigidity of constitution," is not impotence.

The following rules as to the mode of conducting examinations in cases of alleged impotency are most excellent:³

³ Guy Forensic Med., p. 61.

1. Note the age, general appearance, habit of body, and state of health of the person complained of, and ascertain what diseases he or she may have previously labored under.
2. Examine carefully the sexual parts.
3. Practice no manipulation of a gross or indelicate kind, as they are both unnecessary and inconclusive.
4. Use no artificial stimulus.
5. Make a microscopical examination of the semen.

A physician is never justified in committing any offense against decency, even when the object in view is one of importance. He should never let any theories prevent him from carefully and candidly giving his judgment on facts within his own knowledge, or force him to ignore those facts.

§ 38. Doubtful sex.—It was at one time supposed that there existed beings who possessed the sexual organs of both sexes in a perfect condition, but experience and research have shown that such beings do not and probably never have existed. It is, however, very clear that many very singular malformations have been seen.

The name Hermaphrodite is commonly applied to all persons afflicted with malformation of the sexual organs, and they may be divided into three classes:

First. Individuals exhibiting a mixture of the sexual organs but neither of them entire.

Individuals of this character are very seldom, if ever, found. A post-mortem examination will generally develope the preponderance of the sexual organs of one or the other sex. As is well known, there are in the two sexes, sexual organs which correspond with each other, called analogous organs, and it is extremely doubtful if any creature ever existed having any two of these analogous organs. Of course these individuals are impotent.

Second. Male individuals with unusual formations of the urinary and generative organs, called androgyni, or men-women. Sometimes these individuals may be relieved by a surgical operation, and a case is reported where one who had been considered a girl until 22 years of age, in consequence of straining

himself in leaping, loosened his sexual organs from their unnatural position and found himself a man.

Many cases of this nature are reported in the books, and very often they are classed as females, but a careful examination has always shown the presence of the male and not the female sexual organs, or the former predominating, and this must determine the sex. These individuals are also impotent.

Third. Females with unusual formations of the sexual organs called androgynæ, or women-men.

Upon examination such individuals are found to be females, with the clitoris enlarged or afflicted with prolapsus-uteris.

The causes of these departures from the usual form arise from some abnormal change in the sexual organs in early embryonic life, causing an arrest in development and a defect in some parts. With this defective sexual development, there are usually associated certain peculiarities which indicate the preponderance of one or the other of the sexes. Until the period of puberty it is often difficult to determine the particular sex of the individual. At this epoch, however, certain changes usually occur that show the preponderance of either the male or the female sex, such as change of voice, greater development of the shoulders or hips, the appearance of a beard, development of the breasts, etc. The absence of testicles does not prove that it is not a male, since the testes sometimes never descend into the scrotum. Neither does the presence of a beard and whiskers necessarily indicate that it not a female, for we have the bearded woman of the side-show. In some cases, an external examination may fail to indicate the sex, the clitoris may be mistaken for the penis, the labia for the scrotum, and the prostate gland for the uterus. Even a post-mortem examination may not always succeed in clearing up the uncertainty.

In the case of Levi Suydam, the question of the right of suffrage was raised and the physicians were called upon to testify for or against the alleged hermaphrodite. The mere statement of the interests involved must convince any person of the necessity of acquiring information upon the subject.

In addition to the tests which have been mentioned as being of service in determining the sex of such an individual, it will

assist the examiner if he observes the conduct of the person in the presence of different sexes.

Among ancient people infants of doubtful sex were burned or cast into the sea.

According to the canon and civil law there was considerable question as to whether or not hermaphrodites could marry, but they were never prevented from marrying, and in some cases were permitted to marry a male or a female, as they chose.

An old French law compelled them to make choice of sex, and having made that choice, compelled them to abide by it.

They were not admitted to holy orders, as they could not aspire to any dignity.

The Hindoo laws, which provided that a son should inherit all of the ancestor's estate but a daughter only one-half, provided that a hermaphrodite should inherit three-fourths.

Cases of libel and slander may arise, in which it may become necessary to obtain medical testimony, unless the court should rule as it did in a case reported by Chitty, where a dancing master had sued for damages because he had been called a hermaphrodite. The court gave two reasons for deciding that the action could not be maintained:

1st. Such a union of the sexes could not exist in fact, and every one must be supposed to know it; consequently the statement could not be supposed to injure any one.

Such an assertion as this is surprising in view of what is known by every member of the medical profession.

But the other reason given by the court is convincing, and however erroneous may have been the court's knowledge of medicine, there existed no ignorance of human nature, as is shown by

2d. Because, admitting the possibility of such a double function, the party would be just as good, and *perhaps even a safer dancing master*, than if one perfect sex could have been discoverable, consequently the words would not, in legal presumption, injure him in his profession or occupation.

It has been decided⁴ that an action for slander will lie for calling a woman a hermaphrodite, and that, too, without proving

⁴ Malone v. Stewart, 15 Ohio 319, 45 Am. Dec. 577.

any special damages. This decision means that the words themselves are of such a damaging nature that merely speaking them renders a person liable for damages.

In actions of libel and slander, the law of some states allows the party sued to prove the truth of the words spoken and relieve himself of any damages.

In the examination of sexual organs, always remember the form and the construction of the parts of the different sexes, and do not be deceived by the smallness of some parts and the enlargement of others, for the various organs are generally distinguishable, if a too superficial examination is not made. Of course it is very much more difficult to make the distinction where the subject is a newly born child.

The case of Levi Suydam is so singular as to be worth considering, particularly as it is probably the only one of its kind of which we have such a record and made under such circumstances.

In 1843, at the time of a hotly contested election, Levi Suydam presented himself for registration as a voter. He was 23 years old, a native of Salisbury, Connecticut, and was brought forward by the Whigs. He was challenged by the opposite party and examined by Dr. Barry, who pronounced him a male, and he was allowed to register. On the day of election Suydam was challenged at the polls by Dr. Ticknor. Dr. Barry being present, said he had examined him and he was satisfied he was a male. At Dr. Barry's request Suydam retired to an adjoining room with Drs. Barry and Ticknor, and both physicians announced themselves as satisfied that he was a male, and his vote was received. Whether his vote decided the election is not reported, but a few days after the election it was learned that Suydam had menstruated for years, thus showing that the physicians were mistaken in the conclusions which they had reached as to her sex.

Another singular case well worthy of note is that of the person called "Betty Johns."

This person being indebted to another, the creditor wished to bring a suit in the court of requests at Birmingham, England, to recover the same. (This was a court established in towns by

act of Parliament where suits for small amounts could be brought and tried without a jury.) The creditor not knowing whether the debtor was male or female, was at a loss by what name to begin suit. The defendant had been for many years known in Birmingham in the dress and character of a female called Elizabeth, and had also for a number of years been known in the dress and character of a man, who answered to the name of John. Determined to compel his debtor to come into court, he brought suit against Elizabeth *alias* John Hayward. The defendant appeared in court in a female habit; was rather elegant in dress, of a moderate size, rather handsome, about 32 years old, had a fine countenance and manly step, no beard, eyes feminine, voice masculine, with manners engaging and in conversation sensible. She claimed that she was married to a man, and that the court had no jurisdiction over a married woman, as under the law as it then stood a married woman could not be sued in a law court. The trial continued several days and attracted considerable attention and the attending crowd named her Betty-Johns.

In deciding the case the judge said: "It appeared from undoubted testimony that while she dressed like a man she was suspected of being a woman; but that in both dresses the preponderance of opinion was that she was a man. Hence arose the claim that she was an hermaphrodite.

When she wore her male dress she spent her evenings at the public houses with her male companions, and could, like them, swear with a considerable grace, get drunk, smoke tobacco, kiss the girls, and now and then kick a bully. Though she pleaded that she was a wife, she had really been a husband, for she courted a young woman, married her, and they lived together in wedlock until the young woman died, some years after the marriage. She afterwards kept a mistress and ran away with her. Forceable evidence like this is sufficient to convince us, says the judge, that a man in disguise stands before us. The wife living peaceably with him all her days without one complaint of a breach of the marriage covenant showed that there was no defect. Keeping a mistress is essentially a masculine accomplishment. The conduct of the defendant in the presence of

and towards females shows him to be a man. The court thought much information as to the sex of the defendant was conveyed in the evidence of her power to kick, which art the court said was never thoroughly understood by the ladies, and had fallen into "innocuous desuetude" since the days of good Queen Bess. It also seemed to the court that the defendant's ability to refrain from talking was evidence of her masculinity. Summing up all of the evidence the court pronounced the defendant a man and gave judgment accordingly.

That the judgment of this court was not infallible despite the learned reasons given for the same was evidenced by the fact that not long afterwards Betty-Johns gave birth to a child.⁵

While not connected directly with this subject, the following is an interesting account of concealment of sex: Dr. James Barry, who was Staff Assistant Surgeon in the British Army, and died in 1865, aged 80 years, was shown by the autopsy to be a woman. During her long life she had managed effectually to conceal her sex, although effeminate in appearance and without beard. She passed her medical examination, and served in the army in the different quarters of the globe, and exhibited all the usual qualities of a good soldier during her active life.⁶

During the year 1906 there died in the United States a Russian, supposed to be a man, but after her death found to be a woman. She had been married to women three times, and had with her a young man who claimed to be her son. No reason for this masquerade has yet been found, and the two wives at first denied the story of her sex. Subsequently they admitted it was true, and one of them claimed the alleged son as her own by a former husband.

§ 39. Age and identity.—Upon the subject of age, unless it should be regarding the age of a *fœtus*, very little medical evidence can be available. And yet cases may arise where it will be important to determine whether a child before reaching the age generally assigned for puberty possesses the powers and at-

⁵ 10 Ohio W. L. B., p. 240.

⁶ Reese Med. Jur., p. 511.

tributes of puberty. Such questions sometimes arise in prosecutions for rape. Also the age at which a female may conceive, and when she can no longer conceive. But no general rule can be observed in such cases in view of the fact that a girl has been known to conceive at nine years of age and a woman to bear children at an age far beyond that usually assigned to what is called the change of life.

The subject of personal identity may be closely connected with that of age, for by that sign the identity may be established whether in the living or dead. And in case the examiner has any well established facts to start with, he may follow them up to a correct conclusion.

The medico-legal consideration of the subject of personal identity is much more important than it may appear at first sight. The question is often raised in trials, both of a civil and a criminal character, and it may constitute the chief link in the whole chain of evidence. Cases of mistaken identity are constantly occurring, and proofs abundant might be adduced to show that innocent persons have frequently been made to suffer the penalty of death, judicially, instead of the guilty, simply through an error of this nature. Should an alleged child or other claimant present his claim to an inheritance, he must first establish his identity before taking further steps in the suit. If an individual is assaulted or robbed, he will be required to identify his assailant before he can successfully prosecute him. Or, again, a person after many years' absence in foreign climes returns home to claim his rightful title or property, but he is so changed as to be unrecognized by his nearest relatives. He must be able to prove his identity in the courts before his claim can be sustained.

A very singular case came up in Illinois a few years ago. There appeared one day in one of the villages of that state, a man who said his name was Neuby, and that he went into the civil war from that village. He was directed to the widow Neuby's house and she recognized him as her husband. His story was that he was left on the field of battle for dead, and that when he revived he was hurried away to a rebel prison. There he lost his mind, and when the war was over he was

turned out and wandered through the south, a harmless lunatic, for over thirty years, when his reason returned and his memory of who he was, and as soon as he could he came to his former home. He applied for a pension, and these were the facts on which he based his claim, but the government arrested him for making a false claim for a pension. On the trial the government brought witnesses who testified that they had known him all his life; that he had always lived in Tennessee, had never been in the army, and that his name was not Neuby. On his side his wife and several of his neighbors just as positively identified him as Neuby. The jury, however, convicted him, and he was sent to the penitentiary as an impostor.

And then in relation to persons found dead, whether in cases of recent death, where the body has undergone but little change, or years after the decease, where nothing remains of the body from which to glean the important information but the bare skeleton—the question of personal identity acquires the most intense interest, more especially in a trial for murder, where it becomes as essential to establish the identity of the victim as that a crime has been committed. It is true that the aid of the physician is not so frequently invoked for proving the identity of the living, since this can generally be established as satisfactorily by friends and neighbors as by medical men. Still, there may be occasions of unusual complexity, in which a professional opinion may become requisite, as, for example, to verify certain deformities, fractures, scars, marks showing trade or occupation, and other marks about the person, when these constitute the evidence on which the identification may depend.

The principal means of identification are: 1, sex; 2, age; 3, stature; 4, personal appearance, individual peculiarities and resemblances, markings and cicatrices; 5, certain habits and gestures; 6, voice; and 7, handwriting. Considerable importance should be attached to physical signs, for the recollection of the witnesses may be weak or the physiognomy of the claimant may have altered; but the marks will remain.

Where an individual has been gone a long time, the change of air or food, the manner of life, age and disease may very much change his personal appearance. Notice particularly the

malconformations or congenital marks. These can not be removed or, it seems, successfully simulated. All wounds of the soft parts leave marks of their existence. Serofulous ulcers have their cicatrices, small pox and burns leave their marks, and it is said that the marks of branding can not be effaced. In one case where a prisoner had caused an eruption to break out over his whole back, by the application of a pewter plate, the other parts were made pale and the fraud appeared. Friction, however, is better, as the mark then remains white in spite of the rubbing. A cut may produce a cicatrix that is linear or in the form of an ellipse, according to its depth, the manner of treatment or the part of the body it is on; wounds from fire-arms discharged at a distance generally leave a disk like scar depressed in the center, with the skin tightened from there to the circumference; if inflicted very near, the cicatrix will be depressed with irregular edges and powder or marks of it found in the adjacent skin. The mark of a burn varies in form and shape according to the depth of the injury, and the nature of the tissue reached; when superficial it assumes the shape of the burning instrument; when deep it has a rounded circumference; the edges then are rough, concentric and descending like steps. Solid caustics leave perpendicular edges: liquid ones resemble superficial burns unless they have a considerable period to operate. The scar from boiling liquid or from rapid contact with a burning body is large, irregular on its surface and superficial. It sometimes takes months for these scars to complete themselves. A simple dislocation immediately reduced leaves no trace; but in aged, feeble or rachitic persons a stiffness of the part will remain, and if any of the muscular fibers of the tendinous parts have been ruptured scars will remain. Only on dead bodies can the actual condition of fractures or dislocations be satisfactorily observed, but for the examination for dislocations and fractures and their nature and extent in the living, the X-ray has become very valuable on this question of identification.

Spurious vaccination marks leave only red, superficial spots, very different from the figured scars of the genuine. Surgical scars resemble closely those from wounds. When either a skeleton or a part of one is found, the first question asked is, are the

bones human? So, also, the same question arises in regard to portions of the skin or hair. Woodman and Tidy say that a piece of skin with hairs on, supposed to be more than one thousand years old, was by the aid of a microscope, pronounced human. It is very easy to make mistakes when only fragments of bones are submitted for examination, and even with a whole skeleton only those who have a complete knowledge of human osteology and anatomy are competent to give an opinion. There is such a difference between the bones of an adult male and female that it is comparatively easy to determine the sex of a skeleton. The teeth will often give an idea of the age of a person. Although the hair may be dyed, a close and microscopical examination will generally reveal its true color, for it is not possible to dye every part of it. The anxieties of life or the absence of them may render dubious the question of age. After thirty-five there will generally be found "crow's feet" about the eyes and other lines on the face; the hairs on the face grow coarse and make their appearance in the nostrils and ears. The thumb becomes more pointed and the great toe turns outwards towards the middle line of the foot. The skin loses its suppleness and becomes dryer and more greasy. The body either emaciates or becomes much stouter. The abdomen, particularly in females, is often pendulous. The mammae either waste or become very large and hairs often grow about the nipples. The arteries begin to grow cord-like or even bony in hardness and the superficial ones become tortuous. The figure begins to stoop, teeth decay and the nose and chin approach each other. The nearness of the completion or the completion of the points of ossification in the cartilage of different bones may be of use in determining age. The lower jaw undergoes remarkable changes with advancing age. In determining age, the rule of law is, that a person attains majority at the first instant of the day before the date fixed as the date of majority. To determine height from a portion of a skeleton, consult the various tables made up by different writers as to the proportions of the bones; to an entire skeleton add one-half to one and one-half inches for the soft parts.

Distinctions of race are determinable by the skulls. Many personal characteristics, such as tricks of manners, modes of

speech, handwriting, left handedness, etc., may be transmitted from father to son, as well as personal resemblances. Moles and mother's marks are frequently transmitted, and many diseases are hereditary.

To illustrate the point as to transmission of peculiar marks, a young girl living in western Virginia became *enceinte*, but refused absolutely to tell the name of the father of her child. In due time she gave birth to a child, and when the colored nurse took him in her arms, she said, "Dar's no need of telling, for God A' Mighty has marked his father's name on him. He is Sam Billings' boy." The boy had six toes, and so had the Billings for several generations.

A remarkable instance of the transmission of such peculiarities is the following: Gratio Kelleia, himself a Maltese, was born of parents who possessed the ordinary number of fingers and toes. He had six fingers on each hand and six toes on each foot. His wife possessed the ordinary number of digits. Four children were born to this couple. Salvator, the eldest boy, had the six fingered condition of his father represented in full. George and Andre resembled the mother, but the hands and feet of the former were slightly deformed. Marie, the daughter, had also five fingers and five toes, on each hand and foot, but her thumbs were developed somewhat out of proportion.

As regards the second generation, all of the children having married partners with natural hands and feet, of Salvator's four children, three showed the six fingered condition. George had two girls with six fingers and toes, and a third girl with six fingers on each hand and six toes on the right foot but only five on the left, and finally a boy with the natural number of digits. Andre had many children, but all had normal hands and feet; and of Marie's family a boy had six toes, while her other three children showed no departure from the natural type.

Loss of fingers and teeth, or the possession of artificial teeth, have established identity, as in the case of Dr. Parkman, murdered by Dr. Webster.

In the celebrated Tichbourne trial very much depended upon the following facts:

1. The lobes of the real Roger's ears were very badly devel-

oped and continuous with the face. The claimant had well marked lobes to his ears.

2. The real Roger had an issue in one arm, kept open for a long time and almost certain to leave a sear.

3. The real Roger had been bled frequently.

4. He had also been tattooed.

5. The claimant had a brown mark on his side which the true Roger did not have.

6. The true Roger had learned French when very young, but the claimant did not understand it at all. That this last point was of little value in determining the question at issue is shown by the fact that Dr. Livingston on his first return from Africa after many years' absence had almost forgotten the English language.

Not much importance can be attached to habits or gestures in the absence of other unmistakable marks of identity.

It will not often be necessary for the physician to testify in regard to handwriting, although as the medical attendant of a testator, he may have to answer questions in regard to the condition of his patient and his ability at the time to write.

CHAPTER VII.

RAPE—CRIMES AGAINST NATURE.

<p>§ 40. Rape—Description and forms of punishment—Age of consent.</p> <p>41. Consent of female through ignorance.</p> <p>42. Simulated rape—Declarations of woman—Diseases resembling rape.</p>	<p>§ 43. Medical examination—Testimony of physicians.</p> <p>44. Medical tests.</p> <p>45. Rape on insensible woman—Anæsthetics — Insane women — Character of woman.</p> <p>46. Crimes against nature.</p>
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§ 40. Description and forms of punishment—Age of consent.

—Rape is having carnal knowledge of a female person forcibly and against her will, or, the male being over a certain age, which is fixed by statute, carnally knowing a female child under the age of consent with her consent. While it seems like a misnomer to say that a woman can commit rape, cases of this crime committed on young boys are not unknown.¹

If a person kills another in an attempt to commit a rape, he is guilty of murder in the first degree.

In some states penetration without emission is sufficient to constitute the crime of rape; otherwise both penetration and emission are necessary to constitute the crime.

This offense has always been considered a crime among all nations so far as history advises us of their laws. The punishment inflicted has differed with different people. In some states the punishment is imprisonment in the penitentiary for life for rape upon a daughter, sister or female person under twelve years of age; and not more than twenty nor less than three years for rape upon any other female.

In some countries the punishment is death, and in England it is said that since the punishment was changed from death to imprisonment the crime has increased in frequency. In other

¹ 3 Wharton & Stille Med. Jur. (5th Ed), § 198.

countries castration is the punishment, and again the severest punishment was compelling the ravisher to marry his victim. And it is said that countries where marriage was the punishment have not been free from simulated cases of rape. The most unique punishment for this crime existed in Wales at one time, and was as follows: In case the perpetrator of the rape, being accused, confessed the fact, besides being required to make full satisfaction to the woman, he had to answer for his crime to his sovereign, by the present of a silver stand as high as the king's mouth and as thick as his middle finger, with a gold cup upon it large enough to hold what he could take off at one draught and as thick as the nail of a country fellow who had worked at the plow seven years. If he could not make such a present his virile member was cut off. The Jewish law provided a different punishment where the rape was committed in the open fields from that where it was committed in a town or city; providing for punishment of the man only by death in the first case and of both man and woman in the second. This was upon the theory that in a town or city the crime would be impossible if the female made the proper outcry.

The punishment for this crime has always been the same without regard to the age of the female, the only difference being in regard to her consent.

From the records which have been collected relating to the commission of this crime it appears that a female cannot be too young or too old to have the attempt at least made upon her person. In almost all countries it is provided that connection with females under ten or twelve years of age *with their consent*, by a male above the age of fourteen shall be considered rape and punished accordingly.

The scandalous articles published by Editor Stead in the *Pall Mall Gazette* of London (1885), in consequence of which he was imprisoned, were justified by him upon the ground that in no other way could he show the necessity for an act of Parliament raising the age of consent in girls.

Out of one hundred and eleven cases of rape examined by one physician, the ages were as follows: Seventy-eight from two and one-half up to twelve years; seventeen from twelve to four-

teen; seven from fifteen to eighteen years, and seven from nineteen to twenty-five years.

There seem to be two reasons why so many assaults, proportionately, are made on young children; one is that they are incapable of successful resistance, and the other is that there exists a widespread belief, encouraged to some extent perhaps by old women who profess to some medical knowledge, that if a man suffering from a venereal disease can have connection with a virgin, he will be cured.

§ 41. Consent of female through ignorance.—The fact that the female consented through fear or threats, stupefaction by narcotics or otherwise, ignorance of the nature of the act, or from a mistake of the person, does not make the having carnal intercourse any less a rape. There have been many instances where the female has submitted from fear of death or great personal violence, or through stupefaction or on account of her not having the strength to resist. There are a few cases where they have submitted through ignorance of the nature of the act, as in the case of the imbecile girl who could only account for her pregnancy by the statement that her cousin played with her one day on the sofa, and the infamous case of a young girl whose physician, while examining her person because she was supposed to be suffering with a disease of the womb, assaulted her and had carnal connection with her, representing that it was a necessary part of the treatment.^{1*} In all such cases the perpetrators have been properly adjudged guilty of rape, and punished accordingly.

Again, it has been held by some courts that a man is guilty of rape who has had connection with a married woman under such circumstances as that she supposed he was her husband, although other courts have held differently.²

In a case of this kind held to be rape the court, in passing on the question, said: Rape, being defined to be sexual connec-

^{1*} *Pomeroy v. State*, 94 Ind. 96, 48 Am. Rep. 146, 5 Cr. Law Mag. 421; *Reg v. Flattery*, L. R. 2 Q. B. Div. 410.

² *R. v. Barrow*, L. R. 1 C. C. R. 158.

tion with a woman without her consent, and therefore against her will, it is essential to consider what is meant and intended by consent. Does it mean an intelligent, positive concurrence of the will of the woman, or is the negative absence of dissent sufficient? In these surgical cases it is true that the submission to an act believed to be a surgical operation, does not constitute consent to a sexual connection, being of a wholly different character. Can it be contended there is a consent to the sexual connection, it being manifest that had it not been for the deceit or fraud, the woman would not have submitted to the act? In the case of idiocy, or stupor, or of infancy, it is held that there is no legal consent, from the want of an intelligent and discerning will. Can a woman in the case of personation be regarded as consenting to the act in the exercise of an intelligent will? Does she consent, not knowing the real nature of the act? She intends to consent to a lawful marital act, to which it is her duty to submit; but did she consent to the act of adultery? Are not the acts themselves wholly different in their moral nature? The act she permitted cannot properly be regarded as the real act which took place; therefore the act of connection was done without her consent and the crime of rape was constituted.³

Although a female child over ten years of age, where that is fixed as the age of consent, is presumed to be capable of consenting to the act, her lack of physical development may be shown and considered by the jury upon the question of her capacity and judgment in resisting violence.⁴

With the exceptions referred to, the crime is not complete unless it is committed forcibly and against the will of the female. "It is a crime," says Sir Matthew Hale, "easily charged, hard to be proved, and harder still to be defended against."

Sometimes even the courts make it hard for a person charged with this crime to escape conviction, as was illustrated in North Carolina, where it was held sufficient to sustain a conviction for assault with intent to commit rape to show that a negro, seeing a white woman passing along through a piece of woods, gave chase to her, crying out to her several times to stop; that she

³ R. v. Dee, C. C. R., 18 I. L. T. Rep. 103.

⁴ State v. McCaffrey, 63 Ia. 479.

ran, and he pursued her until she was out of the woods and in sight of a house, when he ran back into the woods.⁵ On the other hand, it has been held in Iowa that chasing a woman is not evidence of an intent to commit a rape upon her or injure her.⁶

In cases of rape a physician is liable to be called upon to testify, and although frequently on the side of the prosecution, still more frequently for the defendant to show that no crime has been committed.

§ 42. Simulated rape — Declarations of woman — Diseases which produce appearances resembling rape.—It is hard to believe that such depravity exists, but it has been asserted without contradiction that for one real case of rape brought to the attention of the courts there are a dozen false accusations. The only possible ground for such false accusations is to obtain either money or revenge.

One of the most noteworthy attempts to convict an innocent man of this crime was made by Sarah Gleming against Patrick Callaghan in 1838 in Ireland. The complainant was found one morning at daylight suspended from a window by cords about her wrists, with her clothes over her head; upon being conveyed to the hospital she told a terrible story of rape and abuse against Patrick Callaghan, who was immediately arrested. Although this woman lay for weeks in the hospital, apparently suffering excruciatingly and completely prostrated by the shock, in the opinion of her attending physicians the whole thing was a sham, and no rape or attempted rape had ever been committed; and the woman was finally tried and convicted as an impostor. The motive in this case was undoubtedly revenge.

So great is the abhorrence of this crime that generally the testimony of the victim is sufficient to convict the accused, and it is further allowed by the law that the declarations of the victim, made directly after the commission of the crime, may be given in evidence in corroboration of her own statements on

⁵ State v. Neely, 74 N. C. 425, 21 Am. Rep. 496.

⁶ State v. Donovan, 61 Ia. 369, 16 N. W. 206.

the trial. According to some authorities such testimony is limited to the proof that complaint was made, but according to others the full particulars of the complaint may be given in the first instance. It is sometimes a question as to the length of time which may elapse between the occurrence and the declarations before they become too far apart in point of time to be competent as evidence. The answers given by a female child two or three days after the alleged rape, to questions of her mother, induced by her singular demeanor, have been held competent.⁷

In Michigan it has been held that a statement relative to the offense made by a girl eleven years old to her mother thirteen days after the date charged is admissible in evidence.⁸

In Ohio, on the other hand, it has been held that such declarations, made by a child under ten years of age several days after the offense, are not admissible unless the delay in making such declarations is first explained and excused by proof of sufficient cause therefor.⁹

In view of the fact that the charge of rape is an accusation easily made, hard to prove, and still harder to be defended against, the delay of five months by the girl to make any complaints, is a strong circumstance in favor of the accused.¹⁰

Where a priest was upon trial for rape upon a servant girl it was decided that her declarations, made to another priest eleven months after the offense was committed, were not proper evidence, even though she excused the delay by saying that the accused had told her it was a sin to tell on a priest, and she would go to hell or purgatory if she did.¹¹ Sometimes the woman's statements have been admitted on behalf of the accused; as where she said she had had sexual intercourse with the defendant and would have it again, no matter what people might say, and said it to a witness who had seen the conduct of complainant

⁷ People v. Brown, 53 Mich. 531, 19 N. W. 172.

⁸ People v. Glover, 71 Mich. 303, 38 N. W. 874.

⁹ Dunn v. State, 45 Ohio St. 249.

¹⁰ State v. Wilson, 91 Mo. 410, 3 S. W. 870.

¹¹ People v. O'Sullivan, 104 N. Y. 481, 10 N. E. 880, 58 Am. Rep. 530.

and defendant a short time before the alleged rape, even if said after the time of the alleged rape.¹²

Important questions, upon which the medical witness can throw no light, are: As to the time and place of the commission of the crime; what outcry if any the victim made, and whether she complained at once.

In case of an adult, the physician's testimony is of secondary importance; but in the case of young children it is different; for sometimes it happens that they are too young to understand the nature of an oath and so their testimony is not admissible. Then the evidence of the examining physician is all important.

Again, it is a well known fact that young children may, by the importunities or threats of parents, be induced to make false charges, especially in cases where they have any of the diseases of the genital organs to which female infants are very subject. Then the testimony of the physician is important, especially for the defendant. The skill of the physician and the weight given to his testimony is shown by the reported cases, where many of those accused have been discharged solely upon his testimony to the fact that the child was suffering from disease, and not from a criminal assault. It is not so difficult as might be imagined for an anxious parent to persuade a child suffering from disease that somebody has behaved improperly with her, and in a short time to name the somebody, who is forthwith arrested on a charge of rape; and of course the community is at once aroused against him. And because an accusation of this crime does array the whole community against a man, and the mere fact that he has been accused, is generally enough in the eyes of many to condemn him, it is important that the physician should be very cautious and careful in making examinations in such cases.

Female children from four to ten years of age, especially if sufficient attention is not paid to their diet and to keeping them cleanly, are subject to vaginitis, and there is no doubt that many accusations of rape have had no better foundation than the existence of this disease; and that men have been punished when no rape had been committed or attempted.

¹² State v. Cook, 65 Ia. 560.

As illustrative of such a case, take the following, which occurred in Ireland: Margaret Walsh, nine and one-half years old, when first noticed by her grandmother, had vaginitis in a very virulent form; at once her grandmother accused her of improper conduct, which she strenuously denied. She denied being raped, and denied that any person had been guilty of improper conduct towards her. Thereupon her parents flogged her, and kept flogging her until she admitted there had been improper conduct, in order to save herself from further whipping. Then the neighboring women gathered in and endeavored to have the child disclose the man's name; the names of different persons were suggested to her, but without her fixing upon any one. Then her elder sister suggested the name of an old pensioner, who formerly resided near them, and who some months before had given Margaret a piece of sugar. Under this course of treatment she acknowledged that he was the man, and he was immediately arrested and thrown into jail. And but for the medical evidence showing that the prisoner was in no ways diseased he would undoubtedly have been convicted, and executed.

Some encouragement has been given to such people by reason of the ease with which they can obtain the certificate of a physician based on a very hurried examination, after listening to the heated stories of parents and friends.

§ 43. Medical examination—Testimony of physicians.—As soon as a physician is called in a case of rape, he should make full inquiries as to the time and place; note also the time when he is called, by his own watch and by comparing it with some clock in the neighborhood. He should make a rigid examination of the victim, not only of the sexual organs, but of the whole body; also of her clothing if it is unwashed. Also, he should examine the sexual organs, body and clothes of the accused, if possible. He should go to the place where the crime is said to have been committed, and examine that carefully; and not only the place but its surroundings, for he may be asked the question as to how far off the sound of a human voice could be heard.

In the case of rape alleged to have been committed upon a virgin, the first examination usually made is to find if the hymen is destroyed. It is now generally admitted that the rule is that prior to sexual intercourse this memberane will be found in the vagina. If this is found to show the signs of recent destruction the supposition is very strong that a rape has been committed. But the finding this intact is not always proof that no rape has been committed, nor of virginity; for, in the first place, the cases are not rare where the hymen has had to be removed after impregnation and in order to permit delivery; and, in the next place, any penetration whether reaching to the hymen or not is sufficient to constitute the crime; for, as Lord Meadowbank said in a case in Scotland, "Scientific and anatomical distinctions as to where the vagina commences are worthless in a case of rape; it is enough if the woman's body is entered; and it is not necessary to show to what extent penetration of the parts has taken place; whether it has gone past the hymen, into what is anatomically called the hymen, or even so far as to touch the hymen." Such distinctions apply to offenses of which there are degrees, and have no pertinence in a case of rape.¹³

And it is undoubtedly the law that penetration even to the least extent will be sufficient to establish the crime, and this may even be inferred from the circumstances of the case.¹⁴

If the hymen is found to be destroyed, unless its destruction appears to be recent, it does not afford positive proof of sexual intercourse, for this may be the result of disease or accident.

In a young girl no penetration can be made without its effect being apparent, if an examination is made within a short time after the act has been committed. Let the examination continue long enough for all outward marks to disappear, if artificially made, as in the case where a mother had pressed a coin against the parts until they looked very red and inflamed; then the pudendum should be examined for marks of violence, and also the other parts of the body. Remember, that sometimes wounds are very easily self-inflicted, and therefore in examining see if

¹³ State v. Johnson, 91 Mo. 439, 8 Wes. 711.

¹⁴ Taylor v. State, 111 Ind. 279, 9 Wes. 813, 12 N. E. 400; People v. Crowley, 102 N. Y. 234, 6 N. E. 384.

they are in the place or places easily reached by the complainant; examine for any semen either in the vagina, on the sexual parts or on the clothing; for, although emission is not always necessary to complete the crime, and there may be emission without penetration, yet it is a circumstance to be inquired into; in examining the clothing apply the known tests to determine whether what has been found on the body or the clothing is semen, vaginal mucus, or gonorrhreal discharge; if the discharges from the vagina which are complained of are said to have commenced immediately after the sexual intercourse, it is highly probable that they are not gonorrhreal, or at least not communicated at that time by the accused, for gonorrhreal discharges do not make their appearance until the third to the eighth day.

One great difficulty the physician will experience in making examinations in cases of rape will be found in the fact that he will not be called soon enough after the commission of the crime. Even in cases where the rape has really been consummated, the external marks will disappear in a short time, so that the space of forty-eight hours may remove all traces of contusions upon the genitals. The marks of violence upon the person and the disordered clothing, always supposed to be attendant upon this crime, are in most cases not seen by the physician, and he will simply be shown, in most cases, a stained piece of clothing, which, he will be told, the victim had on at the time.

When there is found a simple mucous vaginal discharge without any signs of violence, such as contusions, lacerations, dilatation of the orifice of the vagina, or injury to the adjoining parts, this is not conclusive proof that no rape has been committed, for these signs may have disappeared. Where this discharge is the result of violence it is at first mixed with blood, but in vaginitis it is never bloody.

Although it is hardly possible that a complete entrance could be made into a child's vagina by the member of an adult, yet the attempt so to enter will always be attended with contusion and laceration.

Gangrenous inflammation of the vagina is another disease peculiar to children which has often given rise to a suspicion

of the commission of a rape. But a skilful physician making a proper examination can never be misled or mistaken as to the existence of this disease.

In giving evidence in cases of supposed rape, the physician will not be allowed, nor would it be proper for him, to draw conclusions. Thus, it has been decided in such a case, that where a physician had testified that from the discharge he could not tell whether the child assaulted had gonorrhea or vaginitis, as the diseases are similar, he was not allowed to state that from the fact that the prisoner had gonorrhea he supposed it was *gonorrhea*; for the reason, that that would be assuming as proven the very thing to be proven, viz., that the prisoner had had contact with the child.¹⁵

He should not only not testify to such conclusions, but he should not form them. In such a case he might say that gonorrhœa was contagious, and if the prisoner had had contact with the prosecuting witness he would have diseased her with gonorrhœa.

A hypothetical question put to a physician, whether, in his opinion, the facts assumed would constitute rape, is altogether improper, being a demand for his legal, instead of his medical knowledge.^{15*}

A physician may be examined also as to the question of whether or not the female submitted; her virginity or want of it; whether she suppressed the facts or not; the extent to which the coition was carried; the want of age or sexual capacity in the defendant. It has been decided that although ordinarily a boy under fourteen is considered as not having reached the age of puberty, and as therefore incapable of committing or attempting to commit a rape, yet that presumption may be rebutted by the facts which may show that he has the capacity to commit the crime.¹⁶

The question is often asked whether it is possible for one man to commit a rape upon an adult female. And it is frequently said that if the female is awake, and well and the ages are not disproportionate, unless the female submits through fear of her

¹⁵ Moore v. State, 17 Ohio St. 521, 526.

^{15*} People v. Brown, 53 Mich. 531, 19 N. W. 172.

¹⁶ Williams v. State, 14 Ohio 222, 45 Am. Dec. 536.

life, the crime cannot be consummated. But no general rule can govern in such cases, and every case must depend upon its own circumstances, and a great deal depends on the woman's character for modesty and veracity and the correspondence of the injuries with her narrative of what actually occurred.

A case in point is given by the faithful chronicler of the life and adventures of the knight Don Quixote. His faithful squire, Sancho Panza, was appointed by him governor of one of the provinces which he had subdued, and in that capacity was charged with the administration of the laws. One of the first cases brought before him was the complaint of a buxom maid against a man for rape. The man was brought before him, and the woman told her story. She said he met her in a lonely place and in spite of her utmost efforts, her screams and entreaties, he accomplished his purpose; that, although she fought him with all her powers, her struggles were in vain. The man admitted that he had had sexual intercourse with her, but claimed that she had consented. Sancho Panza gave his judgment in favor of the woman, directed the man to give his purse and all it contained by way of compensation, and dismissed the parties. Before they left his presence, however, he directed the man to take the purse away from her, but when he attempted to do so she easily proved herself the master and retained the purse. Thereupon Sancho Panza called them back and directed her to return the purse, saying that if she had displayed as much vigor in defense of her virtue as she had of the purse, it was apparent she never would have been raped. Showing that, although Sancho Panza was not distinguished for his wisdom, in some things he might well claim rank with Solomon.

Sometimes two or more men are associated together in the commission of this crime, and then the woman is easily overcome by numbers and while one is ravishing her the others are holding her.

§ 44. Medical tests.—What may be called the medical presumptions that rape has been committed are the following:

1. Marks of violence on the genitals.

2. Marks of violence on other parts of one or both parties.
3. Spermatic or blood stains on one or both.
4. The presence of a venereal disease.

In regard to these there are a few specific directions to be given, which are of such importance as to warrant repetition here.

In examining marks of violence, notice whether they have been recently inflicted or at some remote period. Seminal stains on the clothing of the prisoner may have resulted from connection with some other woman or from involuntary emission; and with the woman, they may be the result of connection with some other man; and even if found in the vagina it may have been deposited there without any penetration.

Of both spermatic and blood stains it may be said that they may be accounted as most valuable in evidence when found on both parties. When blood is found on the genitals of a man who has no disease and no visible wound, the presumption is very strong that it is the result of carnal intercourse.

Seminal stains cause a stiffening of the fabric, like those produced by albumen or gum. The seminal stain may be identified by the following tests:

1. By gently warming it before the fire, when it will assume a pale yellow color.
2. If moistened with warm water, it will emit a seminal odor.
3. As a third test, cut out the suspected stain, and place it in a watch glass, adding a few drops of pure water and gently squeezing it with a glass rod until thoroughly soaked; remove the fragments and add a drop of nitric acid, when the liquid, if seminal, will turn a yellow color without giving a precipitate.

Another is the microscopic test. This is the only positive and reliable proof, and is made as follows: Cut out a fragment containing the stain, and treat it as before described, with distilled water. After sufficient soaking apply a drop of the liquid to a glass slide and place it under the microscope, using a very high power. The spermatozoa or zoosperms have a very characteristic appearance. They vary considerably both in numbers and size. On an average, the human spermatozoa is about 1-600

of an inch in length, having a flattened, ovoid head, which is about one-third the diameter of the human blood corpuscle. Attached to this head is a threadlike, tapering tail, that is eight or ten times longer than the head. Very often, in old seminal stains, the spermatozoa will be found only in a fragmentary state, and the examiner should be careful not to confound these with fibrillæ and other bodies which may be accidentally present. The absence of these zoosperms is not to be regarded as conclusive that the spot is not seminal, since, as Caspar and others have shown, the seminal fluid does not always contain these bodies; they may be absent in certain debilitating diseases; after excessive venery and in very aged men.

These bodies exist in the semen of all animals capable of procreation, and they are found in man from the age of puberty to a very advanced period of life.

It is possible to mistake fragments of the spermatoza for fibrils of linen and other fabrics washed out at the time of the examination. A proper degree of caution, together with a knowledge of the peculiar microscopic appearance of these fibrils, should prevent this mistake. Hence, it is deemed safest, in such an investigation, not to decide upon the seminal character of the stain unless one or more *complete* zoosperms are found.

Where the presence of venereal disease is relied upon as a proof of rape, it should be ascertained: First, if both parties have the same form of disease; second, if the disease is sufficiently recent in the woman or child, and third, if it has made its appearance at the proper time after the alleged rape.

§ 45. Rape on unconscious women — Anaesthetics — Insane women—Character of woman.—There is no doubt but that rape may be committed upon women when under the influence of intoxicating drinks and narcotic drugs, and that there have been instances where even virgins have been raped while in a deep sleep, and their first knowledge of the carnal intercourse has been when they found themselves pregnant.

Admitting that such a thing is possible, do not be too ready to admit its occurrence, as it may turn out that not all those are asleep whose eyes are closed.

There is also a well authenticated case of a clergyman who, while watching by the supposed corpse of a young girl, had carnal intercourse with her. It proved to be a case of suspended animation from which she awoke and became pregnant. He was convicted of rape.

While it is true that women may and undoubtedly have been raped while under the influence of ether or chloroform, I commend to you the following remarks of M. Bayard for your guidance in the investigation of such cases: "If," he says, "in some cases individuals have rendered an exact report of what has passed around them, or of the liberties which have been taken with them while under the influence of ether or chloroform, it must not be forgotten that they very frequently have dreams, hallucinations and illusions, which they relate with a conviction of their actual reality. Experts should, therefore, receive with extreme circumspection declarations made by them under such circumstances, and both in their written reports and verbal depositions endeavor to enlighten the magistrate and jury upon the relative value and credibility of such revelations."

The memory of what has passed during the state of etherization is either of events wholly unreal or of real occurrences perverted from their actual nature; and there is reason to believe that the impressions left by the dreams occasioned by narcotics may remain permanently fixed in the memory with all the vividness of actual events.

It was because of the knowledge of the seeming reality of these dreams, as well as for the protection of the patient that there have been passed in some states statutes declaring it to be a crime to "use upon another an anaesthetic unless at its administration, and during the whole time the person is wholly or partly under the direct influence of it, there is present a third person competent to be a witness." A somewhat remarkable case involving this question was tried in Philadelphia some years ago. The plaintiff was a young lady of unimpeachable character, who charged a very reputable dentist with committing a rape upon her, while in his office and under the influence of ether for the purpose of an operation upon her teeth.

She averred very positively in her testimony that she was conscious of his "entering her person" and then "felt pain," but she "was not able to cry out or resist," and "all the time was conscious of everything that was going on." She afterwards "opened her eyes" and again "closed them immediately." After this alleged liberty she states that she inhaled the ether the second time, at the doctor's request, in order to have a tooth extracted. When this was over, she made a second appointment with him for some days after. She parted with the dentist at his front door, without making any complaint, leaving a kindly message for a mutual acquaintance. From his office she walked a considerable distance to a friend's house, stopped on the way at a confectioners. After a visit to her friend, she again walked quite a distance to another friend's house, where she remained several hours and after tea on that same evening first informed any one of the alleged outrage; and on the same afternoon her catamenia appeared, which was her regular time. She further stated that "she did not examine her person before the appearance of the menses, nor did anybody examine her garments before two days had elapsed." *She was never examined by any physician.* Her complaint was made, the defendant arrested, tried and convicted and suffered imprisonment for a term of years. It is not surprising that the general opinion of the medical and legal professions at the time was that his conviction was unjust, and that opinion remains unchanged. There was no medical testimony as to signs of rape. It was evidently one of those cases where a man was convicted upon public clamor instead of upon evidence, the heinousness of the charge blinding the judge and jury to the rights of the accused or else stopping their ears against his claims of innocence. Similar, doubtless, in its facts although dissimilar in results is the case reported as having occurred in Montreal. A dentist was indicted for attempting to commit a rape upon one of his patients while under the influence of chloroform. At the trial her husband testified that his wife was under the strongest impressions that she had been violated by the prisoner; yet this was a pure hallucination, since he was present all the time she was unconscious.

In such cases extreme caution should be exercised in receiv-

ing the testimony of the woman who was under the influence of the anaesthetic, *unless her statement is corroborated by a proper examination*. If this is declined, no matter for what reason, the refusal should be regarded as a strong presumption against the validity of the charge.

It is immaterial whether the narcotic was administered for the purpose of committing a rape or for the purpose of increasing the sexual excitement and thereby inducing submission. In either case it is rape. To have carnal intercourse with an insensible woman is rape, whether the insensibility was produced by the violator or not. In other words, rape is the having carnal intercourse not *against* the will of the woman but *without* it.

Where it is claimed that a rape has been committed upon an insane or imbecile woman, or one who is an idiot, it would only require very little evidence to show non-assent.

Where the crime has been committed upon a woman who has submitted through fear, it must be shown that she used such repelling force as she could.

In such cases the previous character of the prosecuting witness for chastity may be shown. This is usually limited to proving her general character, and the court will not allow evidence of specific acts of sexual connection, even with the defendant, although there are decisions contrary to this.¹⁷

This is frequently a material question with the medical examiner, and one that may change his opinions as to the crime completely.

The objects for which such testimony is admitted are two: First, because a known prostitute is not very likely to make the resistance to the commission of the crime which a chaste woman would and which it is necessary to overcome before the crime or rape can be committed. The nature of the means and the extent of the resistance must depend upon the peculiar circumstances of each particular case.¹⁸ It must not be supposed from

¹⁷ *McCombs v. State*, 8 Ohio St. 643; *McDermott v. State*, 13 Ohio St. 332, 82 Am. Dec. 444; *State v. Patterson*, 88 Mo. 88, 3 Wes. 226, 57 Am. Rep. 374.

¹⁸ *Anderson v. State*, 104 Ind. 467, 4 N. E. 63.

this that rape cannot be committed upon an unchaste woman, for men have suffered imprisonment for rape upon known prostitutes, but it has its influence upon the other evidence in the case. Second, as tending to impeach the general reliability of the testimony of the prosecuting witness.

Evidence of prior venereal diseases of the complainant can very properly be given in evidence in such cases.

Want of age in the accused would, of course, be a perfect defense, but as has been said,¹⁹ the defense that the defendant was too young to commit the crime may be rebutted by medical or other evidence, that, notwithstanding his age, he possessed the physical capacity to consummate the crime.

So, also, incapacity by reason of disease, natural defects, or extreme old age may be shown by medical evidence, and, if established, will constitute a complete defense. The difference in age between the victim and the accused may be of great importance in cases of this kind: as where an adult female accuses a young boy just entered upon the age of puberty, or an old man nearly in his dotage, of having carnal intercourse with her *forcibly* and against her will. Such a case starts with a suspicion attached to it.

It was formerly supposed that if pregnancy followed the alleged rape it proved that the woman must have consented to the sexual intercourse. This theory has, however, been exploded, and it is now admitted that if the organs of the female are in proper condition, impregnation may follow from a forcible, as well as an acquiescent, sexual intercourse.

It will be well to bear in mind that if the rape is committed during the menstrual period there may not be found lacerations or contusions, on account of the natural distention of the parts.

Upon an examination made in case of a rape upon a married woman, the vulva or vagina may not show any signs of injury, but if proper resistance is made by the woman marks of violence will appear on the pudendum and extensive marks of violence on the body and extremities.

If an opportunity is afforded the physician to make an exam-

¹⁹ *Ante*, § 43.

ination of the place of the alleged crime, shortly after its commission, he should notice particularly whether there are any signs of a struggle and whether any blood or bloody mucous discharge can be found upon the ground.

This crime is so easily simulated, so hard to disprove and so revolting to every one deserving the name of a human being, that often but for the medical evidence adduced after searching and painstaking examinations the innocent would become a victim to popular clamor. And therefore it is of the greatest importance that the physician in his examination of such cases should be very painstaking and in his testimony very careful to adduce nothing but facts which are capable of proof.

§ 46. Crimes against nature.—In some of the states and countries what are called “crimes against nature,” or, expressed in one word, sodomy, are punished as crimes, and in general this is defined as carnal knowledge committed against the order of nature by man with man or in the same unnatural manner with woman, or by man or woman in any manner with a beast. Under such a law not only what is commonly known as sodomy or violation of beasts, but also pederasty or unnatural sexual relations with persons of the same or opposite sex, is described and punishable. In such cases it may be necessary to examine the persons of the accused and the accuser, and according to Dr. R. von Kraftt-Ebing their past history and mental condition.²⁰ This crime has been held to cover carnal copulation by the mouth, either of the active or passive person.²¹

The examiner will find that men addicted to such practices are usually of a feminine appearance, and striving to appear like women; they wear their hair long; they remove all appearances of a beard, and frequently appear in female costume, and sometimes adopt all the arts and practices of the female prostitute. They generally seek the society of men, and will not have sexual intercourse with females, and, indeed, avoid their society.

²⁰ *Psychopathia Sexualis* (1893), p. 404, etc.

²¹ *Houselman v. People*, 168 Ill. 172; *Kelly v. People*, 192 Ill. 119, 85 Am. St. 323.

If the crime has been habitual, there will be the usual signs of sexual excesses, and the apparent age will exceed the real. A premature decay of strength will also be a marked effect of this practice. With some this habit seems to be congenital, but with others it is acquired.

The parts of generation are generally much relaxed, the scrotum pendulous and the penis elongated, with a small pointed glans penis. Upon examination of the passive party, the examiner will find the natural folds about the anus obliterated and a trumpet-shaped or horn-like depression of the nates towards the anus; and excoriations on the parts of generation and at the verge of the anus.

Dr. R. von Kraftt-Ebing makes a strong plea for the pederast, because he believes that a perverted sexual instinct is the attendant of an unsound mind, or at any rate that congenital pederasts are irresponsible. In some countries sodomy and pederasty are not crimes, and in others are only punishable when they offend against public decency.

While there is much that is startling in what this learned professor says and in the cases he describes, it will be a long time before the majority will accept his views, much as they may pity the unfortunates he describes.

CHAPTER VIII.

PREGNANCY—DELIVERY—CAESARIAN OPERATION—LEGITIMACY— SUPERFOETATION.

<p>§ 47. Pregnancy—When questions arise.</p> <ul style="list-style-type: none">48. Methods of examination.49. Symptoms of pregnancy.50. Delivery.51. Time of examination—Unconscious delivery.52. Concealed delivery—Pre-tended delivery.53. <i>Corpus luteum.</i>54. Death of infant from rapid or easy delivery.	<p>§ 55. Delivery as to the child.</p> <ul style="list-style-type: none">56. Growth and appearance of foetus—Embryology.57. Same—Statistics.58. Characteristics of new-born child—Determination of age of foetus.59. Estate by courtesy—Inheritance.60. The Cæsarian operation.61. Legitimacy.62. Superfœtation.
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§ 47. **Pregnancy—When questions arise.**—The question whether a woman is pregnant or not often becomes very important in courts of law, and an opinion in regard thereto may be asked in the following cases:

1. Where a woman condemned to die pleads that she is pregnant. The usual custom was to call a jury of matrons to examine the woman and report. The services of a medical man were *generally* and ought *always* to be requested. One of the most famous, or perhaps more properly noted, murder cases in Massachusetts was that of Barbara Spooner, who with three men was hanged in 1778 for the murder of her husband.¹ While under sentence of death she asked for a respite on account of her pregnancy, and a writ *de ventre inspiciendo* was issued to the sheriff ordering him to summon a jury of two men midwives and twelve discreet and lawful matrons to ascertain the truth of her plea. The verdict of this jury was that she was not quick with child, and the execution proceeded. A *post mor-*

¹ Commonwealth v. Spooner, 2 Chand. Cr. Trials 1, 23 Amer. L. Rev. 614, 3 Harvard Law Rev. 44.

tem examination disclosed that the jury had made a mistake. Whether directly traceable to this case or not, it is significant that no case of a like examination has been found since then in Massachusetts, and wherever it has not been dispensed with by statute it has, in the United States, fallen into disuse and even into ridicule.

Statutes in some states provide that when a female condemned to death appears to be pregnant the sheriff shall summon a jury who have the power to examine witnesses, investigate all the circumstances, and make a written report of the result of their investigation. If they report that the female is pregnant, then the sheriff must forthwith suspend the sentence and report to the governor, and the governor when satisfied that she is no longer pregnant must issue a warrant for her execution.

In addition to the difference in regard to who shall compose the jury in such cases the difference of these statutes from the English law is this: all that is necessary in these states is for the jury to find that the woman is with child, whereas in England they have to find that she is *quick* with child. So that in England a week's difference in the time of examination might determine whether a child should die with its mother or be allowed to live. Thus giving rise to one of the absurdities of their law, viz.: that a child, immediately upon conception, may be capable of inheriting property and yet at the expiration of twelve or fourteen weeks be hanged (as it were) for the crime of its mother. Some reason for this may be found in the now exploded theory which our ancestors had, that the child was not possessed of life until it quickened.

2. A woman may say that she is pregnant with an heir, her husband being recently dead. When such a claim as this is made, according to the law of England, the person who will be the heir, if no child is born, may demand that the widow be examined; and if upon examination she is found pregnant, the courts may order her isolation and strict watch kept over her until her delivery. At such examination, medical testimony will be most vital.

3. In an action for seduction, or breach of promise of mar-

riage, the complainant may claim that she is pregnant in order to increase her damages.

4. A married woman, to please her husband, or for some other motive, may declare that she is pregnant. And so also may a lunatic or a religious imposter like Joanna Southcote, who declared that she was going to give birth to a Saviour. She obtained many followers, but dying before the time fixed by her for the birth of a Saviour, was found upon a post mortem examination not to be pregnant.

5. A witness or a party to a suit may claim to be pregnant in order to avoid attendance upon a court or to procure a continuance.

6. An unmarried woman, a widow, or a married woman living apart from her husband may be accused of pregnancy and the result of such a charge would be an action for libel or slander or for a divorce.

7. A medical practitioner may be accused of malpractice because he has mistaken pregnancy for something else or has attempted to produce an abortion.

§ 48. Method of examination.—It seems to be very easy to make mistakes in regard to pregnancy and although the signs of pregnancy are numerous no one of them can be called infallible.

The following rules, however, if followed will be found, if not the best, among the best for determining this question.

1. Never rely upon a single symptom. Not even upon what is considered so sure a proof as the beating of the foetal heart. The auditory nerves may be deceived, as well as the eyes. Never rely upon anything less than the presence of three or four well-known and perceptible symptoms.

2. Bear in mind that it is seldom possible to be absolutely certain of pregnancy before the sixth or seventh month.

3. Never give an opinion until after a thorough searching examination. And in a doubtful case (which is the case in all pregnancies up to a certain point) make two or three, or even four examinations; and give ample thought to the investigation before deciding.

4. The examiner cannot (for legal purposes) place any re-

liance upon the accounts which the woman herself gives of her feelings and symptoms or the reports derived from her friends. Married women who have had children are as apt to be deceived as those pregnant with the first child.

5. Always make these examinations, if possible, in the presence of a witness. Do not presume too much upon a verbal order from a magistrate or police officer and insist upon examining a woman against her will. Few women, knowing your profession, will withhold their consent when asked in a proper and gentlemanly manner to submit to an examination. *Always act the gentleman, with whomsoever you may be dealing, and be as gentle as possible.*

§ 49. Symptoms of pregnancy.—The principal symptoms of pregnancy are:

1. Cessation of the catamenia.
2. Morning sickness.
3. Changes in the breasts.
4. Enlargement and other abdominal symptoms.
5. Changes in the uterus and vagina.
6. Symptoms belonging to the foetus and placenta.
7. Alterations in the secretions, such as increase in the salivary discharge, changes in the urine, etc.

These symptoms are not of equal importance in determining this question, and they are all equally unreliable and may be no symptoms of pregnancy at all, especially if but one of them is observed.

As to the cessation of the catamenia, its uncertainty will be clear upon the statement that some women menstruate during their entire pregnancy; although this statement is accepted as true by most writers on the subject some authorities are of the opinion that genuine menstruation never existed during pregnancy. These authorities admit that cases of periodic discharges of blood occur but, they say, they are not menstrual; it is, however, clear that whether this be menstruation or periodical hemorrhage, the female cannot discriminate; and the examiner may be mistaken. A test which is suggested, and also doubted, is that menstrual blood does not coagulate. Women have been known

to conceive who did not menstruate at any other time than during pregnancy or never did menstruate. It is also true that the cessation may be caused by fright or disease. If a woman desires to conceal the fact of her pregnancy she may stain her linen with the blood of animals or with some decoction colored to resemble blood. Stains upon the clothing may arise from some cause like piles. Therefore, something more than mere cessation of the menses should be observed and their continuance is not always conclusive of the non-existence of pregnancy. The catamenia usually begin between the fourteenth and sixteenth years, and cease between the forty-second and forty-eighth years, but may begin at an earlier age and may continue to a much later age.

Pregnancy during its earlier stages is often accompanied with many derangements of the digestive organs. The most common of these is what is called morning sickness, a species of nausea felt on arising in the morning or upon assuming an erect position. There are many diseases, renal, gastric, cerebral and cardiac, however, which are accompanied with nausea. During pregnancy the general health is as a rule good. The breasts grow larger and heavier, but the most marked visible signs upon them are the change of color in the areolae of the nipples and the increased size of the follicles in the areolae; at the same time the veins become more prominent. These signs are seen to a better advantage in the first pregnancy, and on women of clear complexions having a moderate amount of pigment in the skin. In making an examination of the breasts have the whole bosom uncovered, and before touching them look at them carefully, as their appearance is important in determining the condition of the female. Too much handling of them will produce such a physiological congestion as may deceive. It is the first impression given to the touch which is valuable. The changes commence with the beginning of pregnancy, but are clearly perceptible by the end of the sixth week or second month. There is always an areola, varying from a light pink in very fair women to a brown or almost black in dark women; but during this period it is increased in size. Milk is often present and may be squeezed out of the tubes. The breasts become firmer and more

knotty as pregnancy advances. Sometimes true milk is not secreted until after delivery, but at the fifth or sixth month its presence can almost always be detected if the fluid exuding from the breasts is subjected to a microscopical examination. During the first two months or so there is but little change in the size of the abdomen, but by the end of the third month it becomes perceptibly larger, and continues growing larger and larger until delivery. At the end of the eighth month the uterus reaches the ensiform cartilage and the navel is very prominent; but between this and delivery the uterus falls a little so that the woman seems smaller than at the eighth month. In ordinary cases nothing can be mistaken for this enlargement. There are, however, many diseases in women which may produce enlargement of the abdomen, and many cases are on record where mistakes have been made by relying solely upon the abdominal changes as signs of pregnancy. The uterus during this period increases in weight from two or three ounces to twenty-four ounces or two pounds. The changes in the cervix uteri are very important. The shortening of the cervix becomes evident about the fifth month and at the full time scarcely any neck to the uterus is perceptible. At the same time the follicles about the os uteri become very perceptible. The os uteri is directed backward and has a peculiar velvety feeling, well known to physicians familiar with obstetrical practice; it is filled with a plug of gelatinous mucus. The uterine souffle which is a blowing sound, either hoarse and harsh or soft, whistling, cooing or musical, can generally be heard after the fifth month by auscultation over the uterus, through the abdominal walls, or by means of the metroscope. It is best heard near the usual site of placental attachment and is simultaneous with the pulse.

The vagina is generally relaxed, its artery pulsates more strongly, and its mucous membrane is considerably congested, giving it a violet tinge, shared by the inner surface of the vulva.

Great importance has always been attached to the first symptoms of foetal movement or quickening. The time of the quickening is very variable, and living children have been born without the mother having perceived any movement at all. It generally occurs from the sixteenth to the twenty-fourth week of preg-

naney. It may be discovered from the statements of the mother or by examination of the abdominal walls; when feeling for the movements of the foetus do not mistake contractions of the abdominal muscles or of the uterus itself for the quickening movements. When the movements of the infant are *very active* they cannot be mistaken for anything else.

As early as the fifth month the sound of the foetal heart may be heard and if the infant lives will be heard until delivery. In order to hear to the best advantage the stethoscope should be used. Of course the place for hearing best would vary with the infant's position in the uterus. The beats of the foetal heart vary from one hundred and twenty to one hundred and sixty—one hundred and thirty-eight and one hundred and fifty being the most common and the number being greatest in females. They should *not* be simultaneous with the mother's pulse and if they appear to be so the examiner may be reasonably sure he is not hearing the beatings of the foetal heart.

In the majority of cases the examiner cannot be certain that a woman is pregnant until the seventh or eighth month, however certain the probability may be.

Upon the examination of the dead body of a female who has died during pregnancy, the same general appearance will be noted and generally what are called corpora lutea will be found in one or both ovaries. As, however, these may remain as long as nine and one-half months after delivery, and as they are also found where there is no pregnancy they are not very reliable.

The period of gestation is generally forty weeks or two hundred and eighty days from the cessation of the catamenia, but the period of gestation may be protracted, extending it is said even to the period of forty-four weeks.

Children born in less than the regular period of gestation may live but they will be

1. Smaller, shorter and lighter than those born at full term.
2. Their general development, particularly as regards the cutaneous system, will be far behind that of normal infants.
3. They will require extreme care both as regards the maintenance of bodily heat and nutrition.

§ 50. Delivery.—The subject of delivery should be viewed in two aspects.

1. As it relates to the mother.
2. As it relates to the child.

And also it is properly to be considered.

1. As it relates to delivery in the living.
2. As it relates to delivery in the dead.

This subject more frequently calls for medico legal investigation than pregnancy.

Concealment of birth, abortion, infanticide, and questions relating to supposititious children are closely dependent on the proof of delivery.

To determine whether delivery has been pretended or concealed can only be done by referring to its real signs.

Medical proofs of recent delivery from an examination of a living woman cannot be established after a lapse of a week or ten days, if the woman has previously borne children; if, however, it is the first delivery the existence of the whitish streaks upon the abdomen and the altered condition of the mouth of the womb will afford a strong suspicion of the delivery having taken place before the time of the examination, but how long before cannot be fixed with any degree of certainty.

In cases of real delivery the following circumstances will generally be observed where the woman is examined within three or four days after delivery; paleness of the face; eyes sunken, and dark colored rings around them; weakness, and an appearance of the skin like that of a person convalescing. A great difference, however, is noted in women, for some have been known to go on with their ordinary work immediately after delivery while others will be obliged to remain in bed for weeks.

Other signs of delivery are shown by the softness and laxness of the abdomen which lies in folds; and there will be found on it, shining reddish and white lines, extending from the groins and pubis to the navel, caused by the giving way of the true skin under the distension of the gravid uterus. But these lines may be the result of dropsy or of thinness following great obesity, and after the birth of the first child are not very apparent. In some cases these lines remain for life and so their

presence cannot be depended upon in cases of women who have had several children.

The breasts will be found tumid and hard and upon pressure will emit a fluid, which is, at first, serous and afterwards gradually becomes whiter. The secretion of milk, however, *may* be absent or it may occur in the unimpregnated condition; but the presence of colostrum among the milk corpuscles (to be determined by the microscope) may be regarded as conclusive evidence of a *recent* delivery. The woman generally has a full pulse, soft skin, and the skin is covered with a moisture having a peculiar acid odor.

The areolae around the nipples are dark colored. The most unequivocal form in which milk can appear and furnish the most satisfactory evidence of delivery is when the breasts are tense and painful and full of the fluid. This secretion goes on during the continuance of the lochia, while, on the other hand, if the menses return, the breasts become flaccid and almost empty and when the menses go away fill up again.

The external genital organs and vagina are dilated and swollen from the pressure of the foetus. The soft parts are frequently relaxed as much from menstruation as from delivery; but in cases of menstruation the os uteri and vagina are not so much tumefied nor is there that tenderness of these parts which attends delivery. The labia of the os uteri are found jagged in those who have borne children, and although there is hardly any other cause than child bearing that can produce this appearance, it is not true that the absence of jaggedness is any proof that there has been no delivery. When all signs of contusion disappear after delivery, the parts are found pale and flabby, in which condition they are never found after menstruation. The uterus may be felt through the abdominal parietes, voluminous, globular and firm and rising nearly as high as the umbilicus. Its orifice is soft, tumid and dilated. The anterior margin of the perinaeum is sometimes torn or is lax and appears to have been considerably distended.

A discharge called the lochia commences from the uterus, at first of a red color and gradually becoming lighter until it ceases.

This discharge might be mistaken for menstruation, or fluor albus, but for its peculiar odor which it has been found impossible to destroy or disguise, and its duration.

In addition to the dilated and relaxed state of the vagina and vulva the volume and capacity of the uterus, the thickness of its walls, the blood upon the inner surface and the lacerated appearance of that portion of it, to which the placenta was attached are unmistakable signs of recent delivery. The uterus after delivery does not return to its normal condition for from eight to twelve weeks, and during this period is larger than before pregnancy; its walls thick and firm but not vascular, although traversed by dilated veins, and the mucous membrane of the os uteri is softened as if excoriated; vascular and covered with mucus. The appendages of the uterus partake of the appearance which characterizes it at the epoch of delivery, but they soon regain their ordinary aspect.

As the rate of return of the uterus to its normal condition after parturition is very irregular, any attempt to infer from its condition the precise date of delivery must prove fallacious.

As there may be a question as to whether some of these signs may not be referable to other causes, examine for all these signs and do not come to a conclusion from the presence of two or three of them; but where all or most of them are present the examiner may safely declare them to be the result of pregnancy. If the case is one where infanticide is charged, the existence of the child should be proved in addition to all these. And inquiry should be made as to whether the woman has ever had any of the diseases likely to produce any of these appearances, such as dropsy, mennorrhagia or fluor albus; and if any external violence has been applied to genital organs.

The most precise criteria of the date of delivery are derived from the date of the milk fever which comes on in three or four days generally after delivery; the gradual alteration of the lochia which continues from a week to a fortnight; and especially the appearance assumed by the genital organs in their return to their ordinary healthy condition.

§ 51. Time of examination—Unconscious delivery.—It may happen that the examination will be made too late for the physician to determine whether there has been any delivery.

This is just exactly what happened in the case of Annie Perdiat, who took lodgings with a friend in the fifth story of a building in Paris. Shortly after being shown to her room, a lodger in the third story heard a noise in the waste pipe, as if some heavy body was passing through, and blood was found on the stairs and the floor of her room, when they were examined, about five hours after her arrival; she explained these blood stains by saying they were menstrual discharges; six days after, the vault was searched and a foetus, placenta and bloody clothes were found in it; the foetus was that of a full grown child, and no marks of violence appeared on it, except that the umbilical cord was torn off; it had been born alive and evidently lived sometime after it was thrown in the vault. Annie was arrested on suspicion and *more than a month after* the supposed delivery, she was examined by several physicians, who all deposed that they found no signs of delivery, and notwithstanding all the suspicious circumstances she was acquitted.

A woman may be delivered and be unconscious of it, either when under the influence of narcotics or ardent spirits; during coma, delirium or puerperal convulsions; during sleep; during suspended animation, and at least one case is recorded where, after a woman had died in labor and was laid out for interment, an infant was born.

§ 52. Concealed delivery—Pretended delivery.—Delivery is most commonly concealed when the object is to destroy the offspring as soon as born. In suspected cases, the examiner should inquire into the proofs of previous pregnancy. As in such cases the pregnancy is sought to be concealed as well as the delivery, it may be hard to obtain any facts in regard to it. But he can inquire if any changes in the shape had been noticed, and whether any disease was present or claimed to be present; also whether any precautions in the manner of dressing or arrangement of the clothes were noticed; whether a cessation of the catamenia was observed and if any reason was given for it.

Then he should examine as to the appearance of recent delivery and lastly to the connection between the period of parturition and the state of the child that is found. If the skin of the infant found is very red and the umbilical cord is attached to the navel, he may be certain that the birth was so recent as that the mother will show the signs and marks of the delivery.

Although pretended delivery is not so serious a matter as concealed delivery, yet it needs to be guarded against and in some countries it is punished as a crime. It has its origin in cupidity, a desire to please a husband, to frighten a lover or to obtain an heir for entailed estates; that is, in cases where estates will pass to other branches of the family unless the present owner has an heir. There may be a pretended delivery, where the woman has never been pregnant. Such a case, if thoroughly investigated, may always be detected. There are signs which must be present and cannot be feigned. Where the pretended delivery has been preceded by one or more deliveries it is much easier counterfeited than under other circumstances, particularly if the examination is not made at once. Inquiry should be made as to whether there has been any mysterious conduct on the part of the woman; her age and the length of time since her last delivery and whether her husband is aged or decrepit.

There have been and, therefore, there may be cases where the female has actually been delivered and has substituted a living child for a dead one; and this deception is often so skilfully practiced that it can only be detected by the testimony of those present at the birth, who are generally in league with the woman.

Many interesting and instructing cases of pretended delivery may be found in the books and it is surprising the number of witnesses it is possible to obtain on each side of the question.

It sometimes happens that the woman dies shortly after the supposed or pretended delivery; and it is necessary to examine the body to determine whether the delivery was real or pretended. The physician should then examine the uterus and its appendages, for the former may have been enlarged from causes independent of actual pregnancy.

§ 53. Corpus luteum.—It was at one time supposed that the finding of a corpus luteum or trace of a ruptured Graafian vesicle in the ovary was proof positive of a previous pregnancy. But it is now admitted that it simply indicates the escape of an ovum and not necessarily impregnation. That there is no sufficient distinction between the corpora lutea of simple menstruation, during the first eight or ten days after the escape of the ovum, and those of pregnancy, to enable the examiner to declare with positiveness to which cause it may be ascribed, is now admitted by all medical authorities. As a celebrated microscopist² has said “though physiologically one may be permitted to speculate on the relation between the occurrence of corpora lutea in the ovaries and of preceding coition it would be rash and unwarrantable in any one to pronounce positively from the occurrence of a corpus luteum in the ovaries that coition has taken place. The discovery of an ovum in the uteris in process of development, could alone, in the present state of knowledge warrant such an affirmation in a court of law. But on the other hand, the absence of a corpus luteum would not warrant the assertion that coition had not taken place.” The corpora lutea are oblong glandular bodies, of a dusky yellow color, and it is said that in pregnancy they continue to develop for a considerable period, and do not in fact retrograde decidedly until after the termination of pregnancy; whereas, when impregnation is not present, their development is completed at the end of three weeks and afterwards they undergo a rapid process of atrophy.

§ 54. Death of infant from rapid or easy delivery.—There are undoubtedly many cases where a female who has no one to assist her at the time of the delivery, will be unable to prevent the death of her infant. This would be so in the case of an easy or very rapid delivery. A condition of the parts allowing this, at the first delivery is very uncommon, and if alleged to have taken place, should give rise to suspicion and cause a close examination. A woman may be delivered while passing her faeces; although at least one woman was condemned and executed upon

² Wharton Jones.

the evidence of a physician, who swore that it was perfectly possible for a woman in labor to know, and she always did know, the difference between the bearing down pains of parturition, and the calls of nature, however pressing or painful. This poor woman had been seized with a sudden and painful desire to attend to a call of nature and hastened to the closet, and while seated there her child was born and fell in the vault and perished.

Delivery may also be attended with hemorrhage and the woman be unable to help her offspring. But such cases always leave sufficient traces such as paleness, swooning and the like, to show the cause of the infant's death.

If a child is born while the mother is standing up, it may fall and be killed; in such a case there will always be found a violent and profuse hemorrhage.

Some children require immediate attention on account of their weakness, and the mother may be too weak to keep them alive. Again, the umbilical cord may not be tied after being cut, broken or torn, and for that reason the infant may perish; but in case it has been cut, it certainly excites suspicion if not tied.

The general rule, however, is that most females are sufficiently well aware as to the time when their labor will begin, to call in all necessary assistance; and even during their labor will make known their situation unless through shame they voluntarily conceal it. In disputed cases, where the question is, whether the woman could have saved her child, great stress is properly laid upon her character, and the incidents of time, place and situation.

§ 55. Delivery as to the child.—Delivery as respects the child may become of importance in civil cases where a succession to an inheritance is questioned or in a criminal case where a woman who is pregnant claims that by mistreatment her child has been killed.

During pregnancy the good health of the mother, the increase in size of the abdomen and the motion of the foetus are generally signs that the child is alive. But a healthy mother may bring forth a dead child and a sickly mother a living one; disease may

cause the distension of the abdomen, and in many cases the mother has thought she felt movement, almost at the very time of her giving birth to a dead child. If the foetus dies during pregnancy there is a want of motion in the child; the womb feels as if it held a dead weight, and follows the motion of the body; the navel is less prominent; the milk recedes and the breasts become flaccid; the mother feels a sense of lassitude and coldness accompanied with headache and nausea.

The dead foetus may, however, be retained in the uterus without affecting the health. The best test for deciding whether the foetus is living or dead is auscultation, and if the foetal heart can be heard to beat, no doubt of life remains.

Sometimes putrefaction takes place and then a blackish discharge commences from the uterus. The usual time that a dead foetus remains in the uterus is from one to three weeks, but it may be retained until the termination of the full period of pregnancy.

During delivery if the foetus is dead there will be an absence of motion and fetid discharges; the presenting part will have a bloated feeling; the skin will be soft and easily torn; the bones of the cranium will be, as it were, floating in the softened brain and the umbilical cord will be cold, brown, flaccid and destitute of pulsation.

The coming away of the meconium which was formerly considered a positive sign of the death of the foetus, is now only treated as a warning to use great care in the delivery.

The pressure on account of long-continued labor may occasion death; in such a case the cessation of motion will convey the intelligence of this result.

If called soon after birth the examiner can have no difficulty in detecting the signs mentioned which will enable him to decide whether the death occurred before or during delivery. The two great crimes which may occur at or before the time of delivery, are infanticide and abortion, and this subject of delivery as it pertains to them has been discussed at this time rather as preliminary to the discussion of those subjects.

§ 56. Growth and appearance of foetus—Embryology.—As the next topics will be Infanticide and Criminal Abortion, at this intermediate point we will take up a subject with which it is essential that all examiners should be familiar, in order to make medico legal investigations arising in cases described under the foregoing topics, *i. e.*, the appearance, size and condition of the foetus at different stages of its growth. In addition to the cases which may be classed under one or the other of the topics just spoken of, there may arise other cases in which this information may be important. As, for example, where a pregnant woman was murdered and a motive for the murder was sought for and supposed to be found in the fact that the prisoner was charged with having had intercourse with her at a certain time and therefore desirous of getting rid of her. The condition of the foetus might show that conception *must* have preceded the time of her connection with the prisoner and, therefore, that motive could not exist.

But before calling attention to what may be called the statistics of the foetus I will quote what one of the best known evolutionists has to say upon what the study of embryology has brought to light as to the foetus in its various stages, especially with reference to the doctrine of evolution. Professor Henry Drummond, in his Lowell lectures on the “Ascent of Man,” says:

“The embryo of the future man begins life, like the primitive savage, in the one roomed hut, a single simple cell. This cell is round and almost microscopic in size. When fully formed it measures only one-tenth of a line in diameter, and with the naked eye can be barely discerned as a very fine point. An outer covering, transparent as glass, surrounds this little sphere, and in the interior embedded in protoplasm, lies a bright globular spot. In form, in size, in composition there is no apparent difference between this human cell and that of any other mammal. The dog, the elephant, the lion, the ape, and a thousand others begin their widely different lives in a house the same as man’s. At an earlier stage, indeed, before it has taken on its pellucid covering, this cell has affinities still more astonishing. For at that remoter period the earlier forms of all living things,

both plant and animal, are one. It is one of the astounding facts of modern science that the first embryonic abodes of moss and fern and pine, of shark and crab and coral polyp, of lizard, leopard, monkey, and man are so exactly similar that the highest powers of mind and microscope fail to trace the smallest distinction between them.

"Between the early cell and the infant's formed body the ordinary observer sees the uneventful passage of a few brief months. But the evolutionist sees concentrated into these few months the labor and the progress of incalculable ages. Here before him is the whole stretch of time since life first dawned upon the earth; and as he watches the nascent organism climbing to its maturity he witnesses a spectacle which for strangeness and majesty stands alone in the field of biological research. What he sees is not the mere shaping or sculpturing of a man. The human form does not begin as a human form. It begins as an animal; and at first, and for a long time to come, there is nothing wearing the remotest semblance of humanity. What meets the eye is a vast procession of lower forms of life, a succession of strange, inhuman creatures emerging from a crowd of still stranger and still more inhuman creatures; and it is only after a prolonged and unrecognizable series of metamorphoses that they culminate in some faint likeness to the image of him who is one of the newest, yet the oldest of created things. Hitherto, we have been taught to look among the fossiliferous formations of geology for the buried lives of the earth's past. But embryology has startled the world by declaring that the ancient life of the earth is not dead. It is risen. It exists today in the embryos of still living things, and some of the most archaic types find again a resurrection and a life in the frame of man himself.

"It is an amazing and almost incredible story. The proposition is, not only that man begins his earthly existence in the guise of a lower animal embryo, but that in the successive transformations of the human embryo there is reproduced before our eyes a visible, actual, physical representation of part of the life's history of the world. Human embryology is a condensed account, a recapitulation or epitome of some of the main chap-

ters in the natural history of the world. The same processes of development which once took thousands of years for their consummation are here condensed, foreshortened, concentrated into the space of weeks. Each platform reached by the human embryo in its upward course represents the embryo of some lower animal which in some mysterious way has played a part in the pedigree of the human race; which may itself have disappeared long since from the earth but is now and forever built into the inmost being of man. These lower animals, each at its successive stage, have stopped short in their development; man has gone on. At each fresh advance his embryo is found again abreast of some other animal embryo, a little higher in organization than that just passed. Continuing his ascent that also is overtaken, the now very complex embryo making up to one animal embryo after another until it has distanced all in its series and stands alone.

"The human embryo is a subtle phantasmagoria, a living theatre, in which a weird transformation scene is being enacted, and in which countless strange and uncouth characters take part. Some of these characters are well known to science, some are strangers. As the embryo unfolds, one by one these animal actors come upon the stage, file past in phantom like procession, throw off their drapery, and dissolve away into something else. Yet, as they vanish, each leaves behind a vital portion of itself, some original and characteristic memorial, something itself has made or won, that perhaps it alone could make or win—a bone, a muscle, a ganglion, or a tooth,—to be the inheritance of the race. And it is only after nearly all have played their part and dedicated their gift, that a human form mysteriously compounded of all that has gone before, begins to be discerned in their midst. * * * Through all what zoölogical regions the embryo passes in its great ascent from the one celled forms, one can never completely tell. The changes succeed one another with such rapidity that it is impossible at each separate stage to catch the actual likeness to other embryos. Sometimes a familiar feature suddenly recalls a form well known to science, but the likeness fades, and the developing embryo seems to wander among the ghosts of departed types. * * * After

the early stages of human development are past, the transformations become so definite that the features of the contributory animals are recognizable. Here, for example, is a stage at which the embryo in its anatomical characteristic resembles that of the vermes or worms. As yet there is no head, nor neck, nor backbone, nor waist, nor limbs. A roughly cylindrical headless trunk—that is all that stands for the future man. One by one the higher invertebrates are left behind, and then occurs the most remarkable change in the whole life history. This is the laying down of the line to be occupied by the spinal chord, the pressure of which henceforth will determine the place of man in the vertebrate sub-kingdom. At this crisis the eye which sweeps the field of lower nature for an analogue will readily find it. It is a circumstance of extraordinary interest that there should be living upon the globe at this moment an animal representing the actual transition from invertebrate to vertebrate life. That acquisition of a vertebral column is one of the great marks of height which nature has bestowed upon her creatures; and in the shallow waters of the Mediterranean she has preserved for us a creature which, whether degenerate or not, can only be likened to one of her first rude experiments in this direction. This animal is the Lancelot, or Amphioxus, and so rudimentary is the backbone that it does not contain any bone at all, but only a shadow or prophecy of it in cartilage. The cartilaginous *notochord* of the amphioxus nevertheless is the progenitor of all vertebral columns, and in the first instance that structure appears in the human embryo exactly as it now exists in the amphioxus. But this is only a single example. In living nature there are a hundred other animal characteristics which at one stage or another the biologists may discern, in the ever changing kaleidoscope of the human embryo. Even with this addition the human infant is but a first draft and almost formless lump of clay. As yet there is no distinct head, no brain, no jaws, no limbs; the heart is imperfect, the higher visceral organs are feebly developed, everything is elementary. But gradually new organs loom in sight, old ones increase in complexity. By a magic which has never been fathomed the hidden Potter shapes and reshapes the clay. The whole grows

in size and symmetry. Resemblances, this time, to the embryo of the lower vertebrate series, flash out as each new step is attained—first, the resemblance of the fish, then of the amphibian, then of the reptile, last of the mammal. Of these great groups the leading embryonic characters appear as in a moving panorama, some of them pronounced and unmistakable, others mere sketches, suggestions, likenesses of infinite subtlety. At last the true mammalian form emerges from the crowd. Far ahead of all at this stage stand out three species—the tailed Catarrhine Ape, the tailless Catarrhine and last, differing physically from these mainly by an enlargement of the brain and a development of the larynx, Man."

Let us now take up the subject of the growth of the foetus and its various changes, as shown by statistics on those subjects.

§ 57. Growth and appearance of foetus—Statistics.—Although the embryo has been seen as early as the fifth or eighth day after conception, as a rule, up to the fifteenth day it appears only as a gelatinous semi-transparent flaky mass of a grayish color; liquifying promptly and presenting no distinct formation even under a microscope. It measures at fourteen days one-twelfth of an inch; at three weeks, one-tenth of an inch; at thirty days is about the size of a house fly, has the form of a serpent, and varies in length from three-twelfths to five-twelfths of an inch. At six or seven weeks its length is almost an inch. At the fourth week the mass which corresponds to the head is quite transparent, and contains a limpid fluid. At the seventh and eighth weeks the brain and spinal cord can be distinguished, and the dura mater, adhering to the inner surface of the skull; the fluid contained in the membranes is much heavier than the embryo; the form and lineaments of the principal organs and the places from which the members are to arise can be discerned; the muscles begin to be perceptible and the embryo is about the size of a bee. After two months it is about one and a half inches in length. All the parts are perfectly distinct, and sometimes the sex may be detected if it is a male. At three months its length is two and a half inches; the proportion of the spine is as two and two-thirds is to six, and it weighs about one and

one-half ounces. The nose and mouth are formed and the features of the face become more distinct. The eyes are shut and the eyelids adhere together—the head is longer and heavier than the rest of the body—the umbilical cord is formed—the genitals are distinct—the penis and clitoris are relatively very large—the nymphae are projecting and the labia very thick. During the third month the tubercula quadrigemina, the optic thalami, and corpora striata are developed and the cerebellum and hemispheres can be distinguished. At the fourth month it is from five to six inches long and weighs from two and a half to three ounces. All the external parts are developed except the nails and hair; the great relative proportion of the fluid of the membranes disappears and the foetus nearly fills the cavity of the uterus. The tuber annulare and the pituitary gland may be seen. The genital organs are distinct and the sex plainly distinguishable.

At four and one-half months the length is six inches. During the fifth month comes quickening.

The length is from six to seven inches and the weight from eight to ten ounces. The brain is pulpy and destitute of circumvolutions or furrows. The external ear is completed, although its shape differs from that of an ear after birth. The nails are distinct and the hair begins to appear. In the sixth month traces of fat are found under the integuments, where there had been nothing but a gelatinous mass before. The head, which up to this time has been disproportionately large, now becomes smaller in comparison with the rest of the body. It is, however, still large and soft and the fontanelles much expanded; the brain has rather more consistency, though still easily dissolvable. The corpus callosum is only half as large as the hemispheres; the pia mater is easily separable from the surface of the brain; the skin is fine, pliant, thin and of a purple color, especially in the palms of the hand, soles of the feet, the face, lips, ears and breasts. In males the scrotum is a bright red color, and distinguishable, but the testes are still in the abdomen. In females the vulva is projecting, and the labia separated by the protuberance of the clitoris. The hair on the head is very thinly dispersed, short, and white or silvery in color; the eyelids are closed; the pupils

closed by a membrane; the hair on the eyebrows and the eyelashes thinly scattered; the lungs very small, white and compact; the heart large; the liver very large, dark red, and situated near the umbilicus; the gall bladder contains a small quantity of a nearly colorless fluid, destitute of bitterness; the meconium small in quantity and appearing in only a part of the large intestines; bladder hard and pear-shaped, with a very small cavity. The foetus is nine or ten inches long, and its weight one to two pounds; the middle of the foetus is at the abdominal extremity of the sternum. Two points of ossification are found in the second cervical vertebra, one situated above the other.

At the seventh month the external and internal parts are still more developed. The skin assumes a rosy hue and becomes more dense and is covered with a sebaceous fluid forming a whitish unctuous covering. The eyelids are no longer united, and the membrana pupillaris separating the pupil disappears. The cerebral pulp becomes more consistent; its surface is slightly furrowed and adheres to the meninges. The choroid plexus and the corpora olivaria are formed, but the corpora pyramidalia have been fully formed a month before this time. In both the protrusion is owing to the development of the cineritious matter. It is not until the end of pregnancy that the cineritious substance is formed in the spine or even very manifestly in the convolutions of the brain. The meconium increases in quantity; the hair on the head is longer and darker; the nails are firmer. Its length is from thirteen to fifteen inches, and its weight three to four pounds. The middle of the body is nearer the sternum than the navel. At this time the superior point which answers to the odontoid process is larger than the inferior, which relates to the body of the bone. At seven and one-half months it is fifteen inches long and its spine about six inches long. At the eighth month the skin is denser and whiter; covered with fine short white hairs, and its sebaceous covering is more apparent; the nails are firmer; the hair on the head longer and darker; the breasts are often projecting and a milky fluid may be pressed from them. The testicles in males are frequently attached in the abdominal ring, but one, the left, is sometimes found in the scrotum; in females

the vagina is covered with a transparent mucus. The groove in the cerebral substances gradually becomes more marked and the spinal marrow, pons varolii and medulla oblongata, acquire a remarkable consistency and even firmness; the transverse processes have begun to ossify in the first of the lumbar vertebra. The lungs are of a reddish color, the liver preserves nearly its former relative size, but is more remote from the navel; the fluid in the gall bladder is of a yellowish color and has a bitter taste. Its weight is from three to five pounds, and its length fourteen to sixteen inches. The middle of the length is nearer to the navel than to the sternum.

At the ninth month ossification is more complete; the head is large, but is quite firm; the bones of the cranium, although movable, touch each other with their membranous margins; the fontanelles are smaller; the hair is longer, thicker and darker; the nails are more solid and extend to the extremities of the fingers. The circumvolutions on the surface of the brain are more numerous; the cineritious portions can now be distinguished by their color, and although the lobes which compose the cerebrum retain their former softness, yet the cerebellum and the basis of the cerebrum, have acquired a remarkable consistence. The head measures longitudinally from the forehead to the occiput four to four and one-fourth inches, and between the parietal protuberances from three and one-half to four inches; the circumference passing through the occipital process and the middle of the brow is about fourteen inches, and the arch from ear to ear over the crown about seven and one-half inches. The abdomen is large and round; the lungs are redder and more voluminous; the canalis arteriosus is large and its coats are thicker and denser than before. The meconium nearly fills the intestines, and urine is found in the bladder; the heart, lungs and digestive apparatus are ready for the extra uterine life. Its length is from sixteen to twenty inches, and the spine is in the proportion of eight to eighteen to the whole length of the body. The middle of the body is at the navel, or a very little below.

The weight of a child born at full term is generally from five to eight pounds, and a male child is heavier than a female.

Sometimes the weight has been as low as four pounds and as high as sixteen and a half pounds.

§ 58. Characteristics of new-born child—Determination of age of foetus.—A child born at full term will be able to cry soon after it reaches the atmospheric air; to move its limbs with facility; to discharge urine and meconium freely a few hours after birth; to swallow and digest, as will be evidenced by its seizing the nipple or a finger placed in its mouth. The body will be of a clear red color; the mouth, nostrils, eyelids and ears will be perfectly open; the bones of the cranium will possess some solidity; the fontanelles will be not very far apart; the hair, eyebrows and nails will be perfectly developed. A child is considered immature when these signs are absent, and is born between the seventh and ninth months.

After the death of a child, if it becomes necessary to determine the age of the foetus when the delivery took place, notice the external appearances which have just been described and then dissect the body. Everything that would indicate the power of independent life must be examined for, and the navel, liver, heart and lungs should be very carefully examined.

§ 59. Estate by courtesy—Inheritance.—Although not the law in all the states, it is in some states that in order for a husband to be entitled to an estate by the courtesy in his wife's real estate, *i. e.*, the right to hold, use, occupy and enjoy the same after her death as long as he survives her, a child must be born alive to the husband and wife. In such a case it may be important to know at what period of gestation it is possible for a child to be born alive. It seems to be settled that the general rule is, not earlier than the end of the fifth month. A child delivered by the Caesarian operation, unless so delivered before the death of the mother, will not endow a husband with courtesy, for it must be born alive during the life of the mother.

There may arise, also, question of inheritance, as, for instance, if the child is born alive, it may inherit and also transmit property. It then must be determined what are sufficient signs of life. The old Roman law required that it must be perfectly

alive. The old French law was that it must live an hour and be able to see the four walls and ceiling of the chamber; and afterwards the law required it to cry. The present law of France is, that it must be born alive, which is interpreted by their lawyers and physicians to mean having a complete and perfect respiration. Under the English law, motion is received as proof that the child was born alive, even in some cases where the movements could very easily have been spasmodic; great stress was laid upon the motion of the child, because Lord Coke was of the opinion that if crying was accepted as the test, a dumb child would never inherit. In this, however, as in all other matters, theory must yield to demonstration, and it is well known that a dumb child at birth will give utterance to the natural cry the same as one not dumb. Hence, whatever may be thought of Lord Coke's test of life, the reason which he gives, therefor, is unsound. The Scotch law requires that the child should be heard to cry and weep, and Lord Stair says the law "Hath not left it to the conjecture of witnesses whether the child was ripe." A child delivered by the Caesarian operation may live, or may be found to have life enough to inherit property. This is to be determined by the same test as in cases of children born in the usual way. A monster, unless it have human shape, cannot inherit, and an extra uterine foetus will be subject to the same tests as those delivered by the Caesarian operation.

Where the law provides that the first born son shall inherit, at the birth of twins, some mark or designation should be put on the first born. It is true that an unborn infant may inherit property, and the following case illustrates the extreme limit of the application of the law: A testator died June 19, 1809, leaving a will bequeathing his personal property to such of his grandchildren *as should be living* at the time of his death. H, one of his grandchildren, was born March 6, 1810, eight months and fifteen days after the testator's death, and the courts of Massachusetts held him capable of inheriting a share of this property.³

³ Hall v. Hancock, 15 Pick. (Mass.) 255, 26 Am. Dec. 598.

§ 60. **The Caesarian operation.**—The Caesarian operation is more frequently performed now than formerly, and while better results are obtained by modern surgeons, it is still considered a dangerous and uncertain operation, only to be performed from extreme necessity. Cases are reported when women have survived the third Caesarian operation.

It was at one time very much questioned whether in legal strictness a child extracted by the Caesarian operation could be called "born," especially in determining questions of courtesy estates; in order for a husband to enjoy such an estate it was necessary that a child should be born during wedlock, and it has been decided that if the child is extracted after the mother's death, the husband is not entitled to the courtesy estate. But now birth and extraction by the Caesarian operation are considered as identical terms. Many cases have occurred showing that this operation is not always necessary, even when by the formation of the parts it would be supposed to be. In one reported case a woman was delivered before the operators were ready to commence their work, and in another, when they were on the way to the house. The physician should not be in a hurry to undertake it, and he should be sure he has given nature every opportunity to work in her own way before proposing such extreme helps. Often nature will, if I may use the expression, help herself in an unexpected way. It has been reported that children have been extracted alive by the Caesarian operation hours after the death of the mother, and in one case a whole day was said to have intervened, but these are undoubtedly exaggerations; for under peculiarly favorable circumstances, the child may possibly be extracted alive one hour after the mother's death, but not longer. It is considered that this operation may properly be performed as early as the fifth month of pregnancy, but the child would not be likely to survive if extracted before the seventh month.

It is usually considered proper to perform this operation when the child is living and the mother has died during labor or in latter part of pregnancy, or when the child is dead and delivery in the natural way is impossible, or when both mother

and child are living and by reason of some deformity in the mother delivery in the natural way is impossible.

It is generally said that this operation derives its name from Caesar, who, according to Pliny, was delivered by this operation. Such a statement shows that this operation was known to and practiced by the Romans.

§ 61. Legitimacy.—The question of legitimacy frequently arises in the courts and in such cases medical testimony is generally very important; upon such testimony may depend the honor of a family, or the inheritance of an estate; and so it behooves medical men, when the question arises, not to form their opinions hastily, else a wrong may be done which can never be righted.

The two important medico-legal points for consideration relate to the questions of protracted human gestation, and of premature delivery.

The following propositions may be considered as settled by the laws of this country, and also of England:

I. Every child born in wedlock is presumed to be legitimate, unless it can be shown (1) that the parties had been separated during the usually allotted period of gestation; (2) the absolute impotence of the husband during the same period: (3) entire separation at the period during which the child must in the course of nature have been begotten, or (4) where husband and wife are together under circumstances which afford clear and satisfactory proof that there was no sexual intercourse.⁴ When the woman was so far advanced in pregnancy at the time of the marriage, that her situation must have been known to her husband, this will be deemed as a recognition of paternity, and also of legitimacy on his part. It has been held that the presumption of legitimacy yields to satisfactory proof, such as notorious licentious conduct of the wife; imbecility of husband; intimacy with a paramour; admission of paramour and wife as to paternity of child and denial by husband: leaving husband for paramour and taking child; resemblance of child to paramour.⁵

⁴ Hargrave v. Hargrave, 9 Beavan (Eng.) 552.

⁵ Cannon v. Cannon, 7 Humphreys (Tenn.) 410.

A child born *after* the death of the mother (as by Caesarian operation) is held to be legitimate, although, strictly speaking, the marriage tie is dissolved, by her death; hence, as remarked by Dr. Taylor, a child may be conceived before marriage, and born after the death of the mother, and yet be legitimate, although neither conceived nor born in wedlock.

What is considered the proper period of gestation is a point towards which the inquiries are to be directed. About ten lunar months, or two hundred and seventy-six to two hundred and eighty days, is considered the period of gestation. This time is not fixed without possibility of any different period intervening between conception and delivery, but as the least period required for a complete gestation; and any departure from that period is unnatural, but only in the same sense that this term would apply to tardy or premature menstruation. Another question is, whether a child with all the characteristics of maturity can be born before the expiration of two hundred and seventy-six or two hundred and eighty days. A husband has been absent from home and at the end of seven or eight months after his return a full grown, healthy child is born. At once the honor of the family may be impeached, unless it is conceded that a variation in the period of gestation is possible. Although a variation as to the time of delivery is possible, and although it is said a child born at the end of eight months from conception may be larger and healthier than one born at full term, an examination of a child prematurely born will show a difference in many respects from one born at full term; and a comparison at all points will point out the respects in which the prematurely born is deficient; and if a mature child is born before seven months it may be considered illegitimate. A case of so-called protracted gestation may arise and medical men may be called as witnesses to prove that gestation may or may not have exceeded two hundred and seventy-six or two hundred and eighty days. Many cases apparently well authenticated have been found in which the period extended to eleven lunar months and longer, but it is very difficult in all these cases to fix upon a proper starting point. This is ordinarily referred by women (1) to certain peculiar sensations supposed to be experienced

at conception; this is altogether fallacious, as it is well known that conception may occur in the unconscious state; (2) to the period of quickening; this is equally uncertain since the time of quickening varies so much in different women, from the twelfth to the twenty-fifth week, and in some it does not occur at all; while in others it may be supposed to exist even in the absence of pregnancy; (3) cessation of the catamenia. This is the usual, and on the whole, the surest method of calculating; but it is liable to many fallacies, such as (a) the arrest of the menses before pregnancy; (b) their continuance for a month or more after pregnancy; (c) again, the intervals between the periods are not the same in all women; usually there is an interval of twenty-eight days from the commencement of one period to the commencement of another, but it is frequently longer or shorter, and this in the same woman at different times. As conception may take place at any period of the interval between the catamenia, it is evident there might be a difference of twenty-three to twenty-five days as to its actual date, according as it occurred immediately *after* the one catamenial, or immediately before the succeeding period.

A circumstance often lost sight of in this discussion is, that conception is not always synchronous with intercourse, or "insemination." The former occurs only when the spermatozoids come in actual contact with the ovum. This may take place in the uterus, or in the Fallopian tubes; and, according to Raciborski and Bischoff, several days may elapse, after intercourse, before it is actually accomplished. The spermatozoa are known to retain their vitality for a period of seven days within the vagina; and as fecundation can not result until these meet the matured ovum (which requires a variable period for its descent from the ovary), conception might be delayed as long as seven days. But this does not explain all cases of lengthened gestation. We must, therefore, in the language of Dr. Taylor, "be prepared to admit either that conception may in some cases be delayed by so long a period as five to seven weeks after intercourse, or that there may be a difference of from five to seven weeks in the duration of pregnancy." In 1626 a child born eleven months after the death of the husband was adjudged a bastard, but the

bad character of the mother had much to do with the judgment. In 1779 a child born eleven months and one day after the death of the husband, was adjudged legitimate, the mother's character being above reproach. It has been suggested that the size of the child might be of assistance in determining such questions, but usually in cases of protracted gestation the child is no larger than common. The limit of this excess can not be accurately known, but the greater amount of deviation, the more positive should the testimony be. Dr. James Hamilton, professor at Edinburg College, thinks "that if the character of the woman be unexceptionable, a favorable report should be given for the mother, although the child should not be born until near ten calendar months after the death or departure of the husband." In some countries the length of time after the death of a husband, within which a legitimate child may be born, has been fixed by statute; generally at ten months. In some countries, too, the law has fixed the time within which a widow shall not marry; and in the absence of such laws curious cases have arisen in regard to the paternity of children where widows have with "funeral bak'd meats, coldly furnished forth the marriage tables."

Dr. Wm. A. T., of Norfolk, Va., relates the following interesting case which was tried in that city: Wm. H. Brothers and Sarah E. Brothers, both negroes, were married several years before the date of the trial, and were the parents of two children, a boy and a girl. On November 4, 1883, they separated, and in April, 1884, the wife obtained a divorce and was given the custody of the children. On August 6, 1884, nine months and two days after the last opportunity of access, the wife gave birth to a white child. Thereupon the husband began suit to regain the custody of the children, on the ground the mother was an adulteress; the child to which she had given birth being white, could not possibly be his. The mother resisted this suit and a jury was called to determine the paternity of the child. A medical witness was called, who testified as follows: "I found the child's skin white as pearl—glistening, smooth, and very thin, hair woolly but perfectly white, eyes light gray with pinkish pupils, oscillating continually, nose

flat and thoroughly African, head heavily developed behind, low forehead, rather rounded, lips thin. I had, therefore, no hesitation in declaring the child an albino. Then came the question, is it a negro or mulatto albino? I concluded that the 'kinky' wool and flat nose were sufficiently marked to demand the opinion that it was not a mulatto; but the child had thin lips. At last I concluded that the thinness of lip was probably due to atavism, and that possibly there was a trace of white blood somewhere in one or the other of the parents. The mother was pointed out to me, and I thought that I could see that she was not a full-blooded negro. The two undoubted children of the contestants were now presented in court, and I found that both had thin lips. The father had the same sort of lips and undoubtedly had white blood in his veins. I had seen the child before, but never any other member of the family. I pointed out each feature to the jury, and discussed it before them, and called their attention to the lips as the only feature which prevented me from asserting that the child was a negro, and then called their attention to the other members of the family." Upon this evidence the jury found that Wm. H. Brothers was the father of the child.⁶

As a general rule the impossibility of non-access may be proven and when proven will have its proper weight in determining legitimacy or illegitimacy.

The following case will illustrate the application and enforcement of this principle.

Upon the death of Henry McN., a girl, Margaret McN., claimed his property as his child and heir. Her claim was contested by his collateral heirs. The facts regarding her birth were as follows:

Elizabeth M. was married in December, 1867, to Samuel R., a soldier in the United States army; said Samuel having been discharged in July, 1869, re-enlisted in December of the same year for a period of five years, and very soon thereafter went with his regiment to the State of South Carolina, where he thereafter continuously resided; up to the time of his going to South

⁶ 4 Med. Leg. Jour. 165.

Carolina he and his wife resided in the State of Kentucky, and he left her there when he went to South Carolina, and never saw her after he left Kentucky.

His wife continued to reside in Kentucky until the year 1879, and during that time she did not leave the state.

In September, 1876, her daughter Margaret was born, Henry McN. being her father.

In 1878 the wife moved from Kentucky to Ohio, and in April, 1889, obtained a divorce from her husband, Samuel R.; in June, 1889, she married Henry McN., with whom she lived as his wife until his death.

From the time of the birth of Margaret until his death, Henry McN. recognized and acknowledged her as his daughter, and after his marriage to her mother she lived in his family and was educated as his child.

During all this time the law was as follows:

"If a man having had a child by a woman shall afterwards marry her, such child or its descendants, if recognized by him before or after marriage, shall be deemed legitimate."

The decision of the court was that she was the legitimate child of Henry McN., and as such entitled to his property.⁷

§ 62. Superfoetation.—Superfoetation, which is the impregnation of a second ovum which left the ovary during an existing pregnancy, or something very closely resembling it, has on various occasions occupied the attention of the medical profession; and the subject is frequently closely connected with that of legitimacy. Early physicians were very positive that superfoetation was of frequent occurrence, but modern research has shown that it very rarely if ever happens. The cases in which it has been observed are those of twin pregnancies, in which the children by certain physical peculiarities show that they had different fathers. As in a case in South Carolina, where a white woman gave birth to two children, one white and the other black. The explanation given of this was, that the woman had been raped by a negro, immediately after her husband had left

⁷ Ives v. McNicoll, 59 O. S. 402, 69 Am. St. 780.

her bed. It has sometimes happened that a colored woman has given birth at the same time to a black child and a mulatto, she having had connection with a negro and a white man at about the same time. It is not possible to tell up to what time after one conception, a second conception may take place, but in most of the known cases it has been shown that the acts of connection almost immediately succeeded each other. One case is reported where the second connection was said to have taken place the succeeding night, and one of the children at birth appeared about three weeks younger than the other. There may occur such an appearance in children born at the same time and be accounted for as the imperfect development of twins. One of the children has apparently been stronger than the other and compressed it, and in that way arrested its growth. One of the children may be found to be not only partially developed, but flattened as if by the pressing against it of some larger body.

But the cases hardest to account for are those in which after the birth of a mature child, a second equally mature is born, at an interval of as much as four months. To explain such cases it has been said that the uterus is double, and undoubted instances have been known in which not only the uterus, but the vagina have been double. Retention of a twin after the birth of a first will explain some cases. An interval between insemination and fructification of the womb will explain others. Some may possibly be explained by pre-existing extra uterine foetation. And want of accurate observation may furnish a solution of some cases apparently not explainable as reported. But after all due allowances have been made, there still remain cases which can only be explained, if the facts are as reported, by supposing that a second impregnation took place while the uterus contained one foetus partially developed. So that it may be assumed that true superfœtation is possible but not probable.

CHAPTER IX.

INFANTICIDE.

§ 63. Infanticide.	§ 70. Causes of death before and during birth.
64. Still-born child.	71. Wounds on new-born children — Dislocations — Burns and scalds—Poisoning.
65. Characteristics of child born alive.	72. Difficulties in convicting of infanticide.
66. Hydrostatic lung test—Static test — Breathing and crying of child in utero.	73. Air in heart as sign of live birth.
67. Method of examination.	74. Insanity at childbirth.
68. Age of child and time since death.	
69. Examination of woman, bedding, etc.	

§ 63. **Definition of infanticide.**—This is one of the most important of medico-legal subjects. In its widest signification it means the criminal destruction of the foetus in utero, or of the new born child, thus including abortion or foeticide and what is criminally called infanticide. We will as far as possible consider them separately, and under this head treat of what is commonly called infanticide. In all countries and among all nations, if we except the North American Indians, this crime has prevailed and still prevails to an alarming extent. Not only barbarous nations but the cultivated Greeks and Romans practiced it. Before the advent of the Christian religion, it was legalized among the most enlightened and cultivated nations of the earth. The reasons for the commission of this crime have been almost as various as the nations of the world, but among them were: The deformity of the child; the death of the mother; the fact that the infant was a female; scarcity of provisions, etc. The Christian religion and Mohammedanism have been instrumental in putting a great check on this crime, so that now the principal cause of infanticide, at least among civilized nations, is the illegitimacy of the child and the desire to hide the shame of the

mother. Although the sanction of all civilized nations has been withdrawn from this practice and among them it is now regarded as a great crime, cases of it are still very frequent.

In every case in which an infant is found dead and the manner or cause of its death becomes the subject of judicial investigation, various questions present themselves to the medical examiner, such as the following:

1. Was the child mature; and is it identical, i. e., do mother and child correspond to each other?
2. What is its age?
3. Was it born alive, and how long did it live?
4. Could death have been prevented?
5. Was it murdered, and, if so, how and when?
6. Was its death caused by violence on the part of the mother?
7. Has the suspected mother been delivered of a child, and does the time since her delivery correspond with the age of the child?

While child murder is not regarded as a specific crime by the law, but is treated like any other case of homicide and is tried by the usual rules of evidence in cases of murder, nevertheless, there is this important difference in the nature of the medical evidence required, namely, that it must be proven satisfactorily that the child was *born alive*; in other words, the burden of proof that a *living* child was destroyed is thrown upon the prosecution. The law humanely assumes that every child is born into the world dead until the contrary is shown, because so many children do thus actually come into the world, and many others die very soon after from various causes; and in the latter, the signs of their having lived are frequently indistinct. The term *born alive*, in the legal sense, implies the *complete expulsion of a living child* from the mother. A child is not "born" legally if any portion of its body, a leg, for instance, is retained within the vulva. Hence, through a figment of the law, the destruction of a living child, if only *partially* born, is not regarded as murder. It is not, however, necessary that the umbilical cord should be cut in order to come within the meaning of the law.

§ 64. Still-born child.—In order to understand what is necessary in order to establish the fact that a child has been born alive, it is necessary to understand what the appearance of a still born child is. The visceral and other changes which are apparent in a child born alive derive all their importance by contrast with the conditions and peculiarities of the same organs in the foetus; and to show that a new born child has been criminally destroyed it is necessary to show that it does not possess any of the foetal characteristics.

A child which has been born dead will usually be found still covered with the sebaceous secretions called vernix caseosa. Its hair is closely agglutinated; its ears lie close to the head, the eyes are closed, and the eyelids, when raised, do not remain open. The mouth is closed and a drop of watery blood is often seen trickling from the nostrils. The thorax being unexpanded by respiration appears flat and contracted, and the remnant of the umbilical cord has a fresher look than in a child which has lived a few hours. The trachea is flattened and often contains a viscid mucous secretion. The lungs lie in the posterior part of the thorax, and the rest of this cavity is often filled with a yellowish fluid of a slightly glutinous consistence. They are of a brownish red color, more or less spotted in some cases, have a granular structure and do not crepitate upon pressure. Their length is greater than their breadth and their edges are rounded. Their absolute weight is less than after respiration has occurred, since upon their expansion by respiration an active circulation of blood takes place through them; but their specific gravity is greater, their vesicular structure being undistended by air. If the death of the foetus has occurred some time before its birth there will be found the following signs of intra-uterine putrefaction: The body extremely flaccid and flattened, as if it had been macerated in water; the skin spotted, and the cuticle detached in many places, especially on the abdomen; the head lying perfectly flat in any position; the bones of the cranium moving easily on one another; the face flattened, and the features distorted; the cellular tissue and cavities infiltrated with blood serum; the viscera easily loosened from each other; gas developed in the lungs and liver; the color of the lungs dark brown; an absence

of the usual odor, and also the green color of ordinary putrefaction. On examination with X-rays the expanded lung is translucent, but the lung of a still born child does not allow the penetration of the rays.

§ 65. Characteristics of child born alive.—The following characteristics will be found in a child that has been born alive, although the length of time it has survived, the mode of death and the length of time after death at which the examination is made may have considerable influence over them. As a general rule, if it is seen very soon after death, the remains of the sebaceous matter (*vernix caseosa*) with which a still born child is usually found covered, will be found under the arm pits, behind the ears, and in such places; the hair will be dry and clean, the ears not so closely applied to the head, and the eyes remain partly open in spite of all efforts to close them. The swelling upon the back of the head which is common in new born children, called the *caput succedaneum* where the head has been the presenting part, is far more marked in the child which is born alive than in the still born, provided death has occurred before the expulsive labor pains have begun. In the one case, also, it contains a glutinous bloody serum, while in the other the small quantity of liquid effused is colorless. Yet the *caput succedaneum* is really of no great value as proof of live birth. The thorax is higher and more arched than in the *fœtus*, and the diaphragm is depressed in a corresponding degree by the expansion of the lungs. Generally, the highest level of the diaphragm in still born infants will be found between the fourth and fifth ribs, and in those who have lived between the sixth and seventh. The umbilical cord affords the most valuable proof of extra uterine life of any of the external symptoms, and also of the period of its duration. It is generally of a bluish, pearly white color, of the thickness of a finger, and within twelve to twenty-four hours after birth loses its polish and becomes dry and flaccid. Desiccation begins at the severed end and within twenty-four hours reaches within half an inch of the navel, and this half inch still remains pulpy and amber colored. About the same time the skin of the abdomen near where the cord is attached becomes red and swollen and pushed up

around it in the shape of an inverted cone. During the second and third day the cord dies gradually away, becomes twisted and flattened like a ribbon, and suppuration begins in the moist portion still attached to the navel. On the fourth day the cord becomes of a yellowish brown or black color, and has the transparency and appearance of glue. The separation occurs at various times, but most generally on the fourth, fifth or sixth day. Sometimes, however, even in healthy children, the cord putrefies instead of desiccating, and cases are reported where in still born children it has been found desiccated; in one case on the fifteenth day and in another on the twenty-eighth. Although it has been said that desiccation only occurs in the umbilical cord of living children, which these cases seem to disprove, it should be remembered that in living children the process is completed within a few days after birth, while in these cases a long time had elapsed and there were no signs of the cord becoming detached. It is safe to assume, therefore, that the withering and desiccating of the umbilical cord indicate that the child has lived, and the degree to which the process has advanced is a valuable aid in determining the length of time the child has survived.

Among less reliable signs of extra uterine life are suggillations or discolorations resembling bruises, difference in the color of the blood in the opposite cavities of the heart, absolute or relative weight of the liver, and the discharge of meconium or urine.

When the osseous nucleus in the lower end of the thigh bone measures more than three lines (3-12 of an inch), it is regarded as a sign that the child has lived, although the converse of this is not true.

The lungs are considered the source from which the most reliable proof of live birth is derived.

It is well known that many children come into the world still born, that is, without giving any sign of life, and yet, by proper attention they subsequently do revive and continue to live. From this it is to be inferred that respiration is not the only evidence of live birth. Nevertheless, in the cases of infanticide that come under judicial investigation, in which the proofs of living birth are to be discovered solely by an inspection of the dead body of the child, the fact of respiration is the one main proof to be

established by the examiner. If this fact can be satisfactorily proven, there can be no doubt that the child had lived; but it does not necessarily prove that it was born alive, since it might have perished (naturally or otherwise) *before* it was actually born, in a legal sense. Again, a child may live for several hours after its birth, breathing very feebly; and after its death the air cells of the lungs may present no evidence of distension; so that, judged by this single sign presented after death, the child would be said to have been born dead.

As to the question whether any evidence of life before respiration can be discovered in the dead body, in a case of infanticide, the answer must be that, at present, there are no satisfactory medical data which would authorize a positive opinion in such cases; certainly not from a mere inspection of the lungs. Should there, however, be other evidence, such as marks of great violence upon the body, or proofs, through witnesses, that respiration had been designedly prevented, either by the woman herself or by an accomplice, such circumstances would certainly afford very strong moral presumption of murder, but they could never lead a jury to convict a woman in the absence of all signs of respiration in the lungs. While some writers contend that a true ecchymosis found on the body of a new born child is a positive proof that the blood was circulating at the time, and that it had been extravasated, which could only occur in a living body, and that this proof would be strengthened where the blood was found coagulated and the surrounding tissues deeply infiltrated, yet these evidences of living birth are open to the objection that the injuries might have been inflicted during birth or accidentally after birth.

In the child which has perfectly respiration, the lungs occupy a larger space in the thorax than in the still born. Before breathing these organs are placed far back in the thorax, so as almost to escape notice. After complete respiration, in general, they fill up this cavity completely, and partly cover and conceal the heart and pericardium. Their color is a pale red, shading into blue on the posterior surface and becoming brighter upon exposure to the air; or else irregular light red spots appear upon a bluish red ground. This gives them a marbled appearance,

which can not be given to foetal lungs by inflation, and is characteristic of lungs that have breathed, being due to the presence of blood in the vessels surrounding the inflated lung tissue. Their edges are sharp, here and there curved inwards or projecting in tongue-like processes. They feel tough but not solid when handled, and retain slightly the impression of the finger. They crepitate also when pressed or cut, and upon incision yield a small quantity of frothy blood. They are heavier than the foetal lungs, but specifically lighter than water, floating upon it with the heart and thymus gland attached, and also when cut to pieces. When pressed between the fingers under water, air bubbles rise from them to the surface. These conditions arise when perfect respiration has taken place, and the examiner may expect to find them in a less perfect degree when respiration has been incomplete; when only a small portion of the pulmonary tissue has been penetrated by air they are capable of floating. The larynx is narrower, filled with mucus and closely in apposition with the epiglottis, before breathing; but after breathing it is wider and the epiglottis no longer closes the larynx.

The diaphragm is considerably more depressed after respiration has been established than before. The position of the diaphragm may also be affected by the gases produced during putrefaction.

The changes occurring in the foetal channels for the circulation of the blood are so gradual and there is such great irregularity in their obliteration that but little dependence can be placed upon them in determining whether or when respiration has occurred. The external appearance of a child which has respired imperfectly is not strikingly different from one who has respired perfectly. The principal difference is in the appearance of the lungs. They will not reach so far forward as the pericardium and the brownish red color of the foetal lungs will be replaced in part only; the aerated parts will be found principally in the upper lobe of the right lung, owing to the fact that its bronchial tube is larger than that of the left side; the aerated parts will float, while the balance of the pulmonary substance will sink, although but little respired air is needed to float an entire lung.

§ 66. Hydrostatic lung test—Static test—Breathing and crying in utero.—The hydrostatic lung test has always been considered of great importance in cases of infanticide, and is conducted as follows: Properly open the chest, and accurately note the position, size, color, etc., of the lungs. The great vessels at their roots are then to be tied and cut. Carefully remove the lungs from the chest, always in connection with the trachea; whether the heart remains attached or not is not important. Place them on the surface of pure cool water not above 60° Fahrenheit, and if they float the evidence is very clear that they contain air, and the more perfect their expansion has been the higher they will float. If, on the contrary, they sink to the bottom, it is evidence that they contain little or no air. But the investigation must not stop here. Carefully remove the thymus gland and the pericardium, so as to avoid injury to the pulmonary tissue, and then put the lungs into water. Each lung should be tried separately and then divided into small pieces, and each of these put separately into the water, both before and after compression between the fingers. By this means satisfactory proof may be obtained as to whether the lungs contain air or not.

The objections made to the hydrostatic test are founded on two facts: First, that the air which gives buoyancy to the lungs may have been derived from other sources than natural respiration; and, second, that notwithstanding the absence of demonstrable air from these organs, the child may have lived.

The sources from which the air may have been derived are: Putrefaction, emphysema or windy swelling, and artificial inflation. Where putrefaction has set in the lungs are of a greenish color, of diminished consistence, and have a fetid odor. The air evolved by putrefaction is not contained in the pulmonary vesicles, but in the cellular tissue and chiefly between the lobes and lobules. It is well to remember also that putrefaction attacks the lungs of a child later than any other organ, and the striking changes attending it in the lungs can not possibly permit an error in the examiner. If no signs of putrefaction are present, it is wholly immaterial to the case under investigation what the effects of putrefaction are. A putrescent lung will not crepitate. Emphysema is *never* found in lungs that have not respired, and

it is therefore not permissible to ascribe the buoyancy of the lungs of new born children to this cause.

The lungs can not be fully inflated by artificial respiration so as to resemble in their appearance and hydrostatic relations lungs which have perfectly respired. However successful the artificial respiration may be, the surface of the lungs will never present the peculiar dark marbling which is a sign of respiration. Of course this is only seen in lungs that have distended considerably, and the effects of artificial respiration can not be distinguished from those of imperfect respiration. If other evidence can establish the probability of artificial respiration, then the examiner may be called upon to answer whether the results of his examination justify or support such a probability, and it certainly is not presumable in case a child is found with its throat cut, or strangled while circulation was going on, that artificial means were employed to keep it alive. The appearance of the surface of the lobules and the development of the air cells may be important in such cases.

But it has been said that the lungs of a child that has respiration, when submitted to the hydrostatic test, may sink and remain at the bottom of the vessel as in the foetal condition. Any disease which increases the density of the pulmonary structure will cause them to sink, but if the structure of the lungs is so diseased as to cause them to sink in water, the cause can not fail to be evident. There are well authenticated cases, however, where life and respiration have continued for some time and without the presence of any disease and yet the lungs have been found to sink in water. In such cases the hydrostatic test is found to be imperfect and affords no proof of the non-occurrence of respiration, although the respiration must have been exceedingly restricted.

The mere buoyancy of the lungs is not of itself proof of respiration, but with proper precautions this test may be depended on. The temperature of the water is an important element in the investigation. In a case of alleged child murder tried in Pennsylvania, the state undertook to establish the fact that the child had been born alive by evidence of an examination of the lungs by the hydrostatic test, physicians giving it

as their opinion that the child had lived because the lungs floated in water in whole or in part. The physician who made the test, having neglected to regulate strictly the temperature of the water in which the lungs had been tested, it was taken advantage of by the counsel for the defense, who by a very ingenious and delicate experiment demonstrated to the jury that there was no reliance to be placed on the hydrostatic test unless the temperature of the water had been carefully ascertained. He put a vial of shot just heavy enough to float in water of a medium temperature into warm water, and it sank; in putting it into cold water it floated.

The lungs sink: (1) From total want of respiration; (2) from feeble or imperfect respiration; (3) from disease. Hence the mere sinking of the lungs in water is not, of itself, a positive evidence that the child has not breathed; but, with due precautions, it may be regarded as a safe test.

Although it is true that the hydrostatic test does not always detect crime, it can be said in its favor that it never causes the life of an innocent person to be placed in jeopardy.

Because the weight of the lungs differs very much, sometimes weighing more in still born children than in those who have respiration fully and completely, and because the relative weight of the lungs and body differs in various individuals, according to sex, peculiarities of conformation and other circumstances, the static tests are not now considered very reliable, even in cases where the child has fully respiration.

The following are the chief points that have been demonstrated:

1. That although respiration is conclusive evidence of life, it may take place previous to birth.
2. That life for a brief period is compatible with absence of respiration.
3. That none of the mere anatomical proofs of live birth are satisfactory when taken singly.
4. That, even when combined, they fall short of demonstration.
5. That the result of the hydrostatic test (in some as yet

unexplained cases, where the lungs sink in water although the child has breathed) may be negative in its character.

6. That the hydrostatic relations of the lungs afford evidence in reference to respiration which, especially when confirmed by the static tests, is exposed to few real sources of error.

7. That the objections to the hydrostatic test are *mainly* theoretical.

8. That the burden of showing their applicability rests with the objector.

9. Where exceptions to the value of the hydrostatic test do occur they are principally instances where delivery has been aided by instruments and where death has followed one act of respiration.

There is now no doubt but what a child may breathe and cry while in its mother's womb, thus apparently complicating the question as to whether a child was born alive or not, for the determination of which question so much depends upon the condition and appearance of the lungs. The doubtfulness with which this assertion was at one time received is evidenced by what the great French surgeon Velpeau said, *viz.*: "That he believed it since it was asserted by learned and credible men, but that he would not have believed it if he had observed it himself."

As the crying of the child in the uterus, technically called *vagitus uterinus*, has only been noticed in lingering and assisted deliveries, it can hardly enter into, to disturb the examination of a medical witness who is called in a case of concealed delivery, where it may well be presumed not to have taken place.

It is also well settled that imperfect respiration may take place after the delivery of the head, while the body yet remains in the vagina and the womb. As a child is not in such a case, in law, considered born, it can readily be seen how much doubt this circumstance may throw upon the question of whether the child was born alive or not. In such a case after the delivery of the head and respiration, the umbilical cord may be wound so tightly around the neck as to strangle it; then the examiner will find marks of strangulation and the signs of respiration, and in the absence of a witness to the birth, the mother is often unjustly suspected of infanticide.

If violence was inflicted on a child which had lived without respiration, the existence of life would have to be proven by other than medical evidence. In such a case the lungs would remain in the same condition after as before birth, and there is no absolute medical proof of extra uterine life except respiration. Hence, the commission of infanticide by submerging the child in water before it has breathed, or in any way excluding the air from it, without leaving any external marks, deprives the medical examiner of the means of determining whether the act was committed on a living child or not.

§ 67. Method of examination.—In cases of suspected infanticide the examination of the child should embrace:

1. As regards the external examination:

(a). Everything relating to its external appearance, shape, conformation, condition as to putrefaction, spots, ecchymoses, etc.

(b). Its size, including not merely the length, etc., of the whole but the dimensions of the head and thorax.

(c). Its weight, and the centre of the body.

(d). The condition of the navel and umbilical cord.

2. The internal examination should include:

(a). The dimensions and shape of the thorax.

(b). The situation of the diaphragm.

(c). The color of the lungs.

(d). Their volume, shape, situation, consistency or density, and their absolute and specific weight.

3. The condition of the organs of circulation:

(a). The condition of the heart and its cavities to be noted first.

(b). The ductus arteriosus, its dimensions and shape.

(c). The ductus venosus.

(d). The state of the umbilical vessels.

(e). The foramen ovale.

The foramen ovale is the opening between the two auricles of the foetal heart through which, before respiration, the blood passes directly from the right to the left side of that organ. It

usually closes at birth, or very soon after; but instances are known where it continues open up to adult years, and even throughout life.

The ductus arteriosus is a vessel about half an inch long, which, in the foetus, forms a direct communication from the right ventricle to the aorta; it may, in fact, be regarded as a direct continuation of the pulmonary artery to the aorta. The effect of this arrangement is that most of the blood from the right side of the heart, instead of being propelled to the lungs through the right and left branches of the pulmonary artery, is sent directly to the aorta, and thence into the general circulation. The branches of the pulmonary artery, in the foetal state, are extremely small, inasmuch as they are called upon to transmit but little blood.

As soon as respiration commences the ductus arteriosus begins to contract: at first at its aortic extremity and gradually throughout, until, finally, the whole vessel dwindles down to an imperious cord. During this same period the branches of the pulmonary artery increase in size in order to transmit the due supply of blood to the lungs, which are now performing their proper functions. The closure of the ductus arteriosus, although usually a proof of a living birth, is by no means uniformly so; neither is its open condition a positive evidence of a dead birth, since its closure is gradual and frequently protracted.

The ductus venosus branches off from the umbilical vein, and opens into the vena cava ascendens. It is found in the posterior part of the longitudinal fissure of the liver. Its closure is apt to occur rather sooner than the other openings before alluded to, but it is quite uncertain as a sign of a live birth.

The umbilical vessels consist of a vein and two arteries. The former conveys the blood aerated in the placenta to the foetus, passing in at the umbilicus; and proceeding onward, it divides, one part going into the liver and the other part going through the ductus venosus into the ascending vena cava, and so carrying purified blood to the right auricle of the heart. The two umbilical arteries convey the effete blood out of the body, through the navel, back again to the placenta, there to be re-

newed. After birth, these vessels become closed and obliterated; but the exact time when the closure takes place is hardly more certain than in the case of other foetal channels.

4. The condition of the abdominal organs:

(a). The liver, its weight and size.

(b). The state of the urinary bladder and kidneys.

(c). The stomach and intestines, particularly the large intestines; as to the presence or absence of food meconium, etc.

If the stomach contains blood, milk, starch, or sugar, there can be no doubt that the child lived after birth. The first two substances may be detected by the microscope, which, however, fails to distinguish between human and cow's milk; but the detection of colostrum corpuscles in the contents of the child's stomach would be good evidence that the milk was from a woman very recently delivered.

Farinaceous matter may be easily recognized by the application of tincture of iodine, which imparts a deep blue color; and also by microscopic examination, which may even identify the particular *variety* of starch.

Sugar is best identified by Trommer's test. A concentrated, aqueous extract of the contents of the stomach should be used in the manner described for detecting milk.

The presence of blood in the stomach is not, necessarily, evidence that the child was born alive, since it is possible that it might have been drawn into the throat from the maternal discharges during the passage of the head through the outlet, and before it had breathed.

The presence of meconium in the stomach, like that of blood, is not a positive indication of a live birth, because the child may have drawn it into the stomach and air passages by aspiration in the passage of the head over this substance, through the outlet. Meconium is recognized by its dirty, dark green color and want of fecal odor. The microscope shows it to contain crystals of cholesterine, epithelial scales, masses of green coloring matter of bile and granules.

The absence of meconium from the intestines (where it is usually found at birth), and also the absence of urine from the

bladder, are not, necessarily, evidences that the child has been born alive, since these liquids may be discharged during the act of birth.

5. The condition of the brain and spinal marrow, the cranium being first examined for fractures, etc.

In making the autopsy it is best to make the first incision at the center of the lower jaw, and extend it down to the lower end of the sternum. Some authorities say that the lower jaw should be divided at the symphysis, so as to the more completely to expose the buccal cavity in the search for foreign substances; this, however, may not be necessary. The position and appearance of the tongue are to be specially noticed. The larynx and trachea are next to be laid open, and as much of the oesophagus as can now be seen. The incision is now to be carried down on each side of the spine to the ilium, and the triangular portion of the integuments thus shaped out is to be turned back, so as to examine the condition of the umbilical vessels. The abdomen is next to be opened, and the position of the diaphragm noticed. All the viscera are to be carefully inspected, together with the ductus venosus, behind the liver. The stomach and bowels are to be tied and removed, in order to search for poison, if suspected. The gall bladder and urinary bladder should be examined; also the presence or absence of meconium in the large intestines should be ascertained.

The thorax should be opened by the scissors, preferably to the knife, at the junction of the costal cartilages. After examining the general appearance of the contents, all the great vessels are to be tied, and divided beyond the ligatures; the trachea is also to be divided at its root. The lungs are then to be taken out and weighed, and subjected to the hydrostatic test. The heart may now be examined as to the condition of the foramen ovale, and ductus arteriosus. The head may be examined by making one incision from the root of the nose back to the neck, and another at right angles from ear to ear—strong scissors cutting through the bones. The brain is to be inspected in the usual manner. The spine may also require examination, as also the vertebræ.

§ 68. Age of child and time since death.—The other two questions pertaining to the infant, in a case of child murder, have reference to its age and the interval elapsed since its death. The age of the new born child is to be determined by ascertaining if it exhibits the recognized characteristics of a fully matured foetus, as already described. The exact interval of time that has elapsed since its death can not be determined merely by a medical inspection. Many circumstances would have to be considered, such as the season of the year, the temperature, the place where the body was discovered, etc., before the examiner could venture an opinion; and he should always be extremely cautious in the matter because all signs upon which an opinion might be founded are uncertain.

§ 69. Examination of woman, bedding, etc.—As regards the examination of the woman suspected of having given birth to the child, all signs of recent delivery both in the living and the dead, should be carefully examined for.

If the examiner is called upon to examine bedding, articles of wearing apparel and stains on the floor of a room or water closet, the peculiar smell of a lying-in room, the discovery of foetal hairs, meconium and fragments of the decidua or portions of the placenta and of the membranes, will be almost the only signs on which he can place absolute reliance.

§ 70. Causes of death before and during birth.—The causes of death before or during birth may be: Compression of and by the umbilical cord. This may happen in breech or foot presentations; also when it is prolapsed in these, or in head presentations. In such labors it is well understood that unless the cord is speedily relieved of pressure the child will perish. Another cause of compression arises from its being wound round the child's neck. This is quite a frequent complication, being found as often (according to Elsasser) as one in every five cases. In the latter instance, death may proceed either from the constriction of the child's neck, by the cord causing congestion of the brain, or from the interruption of the flow of blood in the cord itself, owing to the strain upon it. Other causes may be

protracted delivery, debility, hemorrhage from the umbilical cord, or fractures.

The causes of death after birth may be malformation or disease, exposure, suffocation, unconscious delivery, strangling, drowning, wounds, dislocations, poisoning, starvation or burns and scalds.

Those of most frequent occurrence, and, therefore, the most important, are the following:

Intentional strangulation before birth can only be produced where there is head presentation. As strangulation has frequently occurred, the question then arises whether violence has really been inflicted or whether death was caused by constriction of the neck by the umbilical cord. It is very far from being a necessary or common occurrence that marks similar to those of wilful strangulation are produced by the constriction of the umbilical cord. Neither is it true that no marks are found in such cases; sometimes these marks are merely furrows in the skin, without color; sometimes red or blue stripes crossing each other and occasionally extending for a short distance over the breast or back.

If ecchymoses be found under a deep and discolored mark upon the neck, and at the same time there is abrasion of the cuticle or laceration of the skin, such an injury can not possibly be attributed to the umbilical cord. As a general rule, more violence is used in strangling than is really necessary, and therefore distinct marks of a cord or of the fingers with abrasion of the skin will be found. These marks will be irregular in shape and size, being either spots, furrows or indentations; red or livid in color, with sometimes subcutaneous extravasation. Sometimes a ligature is found around the child's neck, placed there, the woman would say, to assist the delivery. Medical evidence can not disprove her claim, for it can only tell whether the marks are those of strangulation or not; not how or when they were made. But if the child is strangled by hand irregular impressions will be left and will be different from those produced by constriction of the umbilical cord. The indenture or discoloration produced by the umbilical cord entirely surrounds the neck, which is never the case in death from hanging; and this

indenture is broad and cylindrical, its edges soft and not excoriated as it would be had a string or other hard substance been used; it is rarely single, but oftener double, and occasionally triple, and is not accompanied by subcutaneous ecchymosis. There is no difference in the appearance of the marks of strangulation made after death while the body is warm from those made before death.

A child frequently dies from protracted labor. In such cases death takes place from congestion of the brain in consequence of compression; the head becomes apparently elongated, and over the occiput a tumor forms, often called *caput succedaneum*.

An inspection of the body will often show that the cause of death was constitutional feebleness—the body showing an immature condition and no other cause of death.

If the body of a new born child shows in its blanched and waxy hue, and in the paleness and dryness of the internal organs, particularly of the heart and lungs, a great loss of blood, and no wounds to otherwise account for it, the hemorrhage will have proceeded from the umbilical cord. Unless the body of the child is already decomposed, this is the general rule; but during the putrefying process the body parts with a considerable part of its blood. A ruptured or lacerated cord will be much less apt to bleed than one that is cut. The hemorrhage may have been accidental or permitted with a criminal design, but it is not proof of a criminal intent that a self-delivered woman neglected to tie the cord. A child may fall twenty-eight to thirty inches without putting any strain on the cord. It is said to be the habit of Indian squaws to break the cord and then bind the foetal end with a strip of bark. There have been numerous instances of rapid delivery in women in an upright position, where the child has suddenly escaped from the mother, and fallen to the ground, rupturing the navel string, yet without bleeding to any great extent.

Fractures on the head may arise from accidental as well as criminal causes. A violent blow or a fall on the abdomen in the later stages of pregnancy may fracture the child's head. Other bones of the foetus may also be broken by falls or blows before birth. Fractures of the skull during labor are classed

as accidents and occur in the parietal and frontal bones only; they are generally slight, being merely fissures in the bones, beginning at the sutures and extending downwards for an inch or less into the body of the bone. Accidental fractures may be recognized generally by their very slight extent, while in cases of murder by violence to the head the injuries are much more severe—the bones are driven in, the brain protrudes and the scalp is considerably lacerated—in fact, such injuries as could not arise accidentally during parturition. A woman may also be delivered suddenly while standing up and by the fall injuries may be inflicted on the head of the child, but fractures of the cranium under such circumstances are not common. Such cases, although comparatively rare, occur sufficiently often to require attention. They present no special marks by which they can be distinguished from cases of criminal violence. Some writers even deny the possibility of this accident, but the weight of authorities, including Casper, admits their occasional occurrence. In order to test the matter, Casper made experiments on the bodies of twenty-five dead infants, letting them fall from a height of thirty inches upon a hard pavement. One parietal bone was found fractured in sixteen cases; both parietals in six cases; once the parietal and frontal; once the frontals; and once the occipital. The fractures, in most cases, occurred about the parietal protuberances. It should be remembered that it is easier to fracture the skull of a live infant than that of a dead one. So, also, it has been ascertained that when firm pressure by the thumbs and fingers is made upon the head of a new born dead child, out of fifteen experiments, in seven, long fractures of one or other parietal bones resulted; in other cases, the result was merely a depression of the bone. Hence, we must conclude that the possibility of such an accident should always be taken into consideration in cases of concealed birth when fractures of the skull are discovered.

Defective ossification of the bones of the head may be mistaken for a fracture unless carefully examined; the gap is generally filled by a membrane and the edges of the bones on either side are thin and bevelled, while the fissure which is the result of violence is indicated, on removing the pericranium, by a red

line; the edges of the bone are jagged, and blood but no membrane intervenes. More or less blood is found in adjacent regions under the scalp and on the dura mater, and if no bone is lost the jagged edges fit together.

Where death results from malformation, an examination by a competent person will be sufficient to show the cause of death. If violence, however, has been inflicted upon such an unfortunate being it is punished as in ordinary cases.

In cases of supposed death from exposure the examiner must found his judgment not only on the appearance of the body but on concurrent circumstances. As is well known, the new born infant speedily perishes if not properly cared for in the way of food and clothing. Deprivation of nourishment for over twenty-four hours is likely to prove fatal, as a general rule. But there have been cases where the infant survived three days without any food, and exposed at the same time to variations of the temperature. The examiner should learn as nearly as possible the length of the exposure, and the temperature of the place where it was exposed, before he can be sure of the signs of death from cold. For, unless the child is frozen, the signs are far from positive.

In such a case the skin is of a purplish color; hands and feet swollen; nails blue and face of a bright red color; the brain is very much congested, and the lungs and right cavities of the heart contain more blood than usual, and when the body is brought into a warm room it putrefies rapidly.

In case of supposed starvation the examiner ought to know approximately how long the child has been without food before the absence of food from the stomach, and the general signs of death from starvation can be relied on. The usual signs are a shrivelled and wasted body, a pale and wrinkled countenance expressive of suffering, and a dry, tough and yellowish skin. The mouth, tongue and fauces are dry, the stomach and intestines empty and constricted; the surface of the stomach inflamed in points and the intestines distended with air; the heart flaccid; gall bladder enlarged; bile in the alimentary canal and but little blood in the great vessels.

Mere neglect or imprudence in the mother will not make out a case of infanticide when death ensues from cold or starvation.

Asphyxia in its various forms is the most common of all the means of destroying the new born child. According to M. Tardieu, whose ample experience extended over twenty-four years, four-fifths of all the cases of infanticide that he examined were due to some form of asphyxia. That out of five hundred and fifty-five cases four hundred and forty were cases of asphyxia. Asphyxia may be effected in various ways: as by suffocation, strangling, hanging and drowning, by smothering under the bed clothes, by exposure to noxious vapors or gases, and by thrusting various substances into the mouth or nose.

In cases of death by suffocation there will be found congestion of the brain; the lungs and right side of the heart filled with dark blood, and, as peculiar to children, numberless sanguineous extravasations, in shape very much like flea bites, on the pia mater, upon the pleura, the surface of the heart and the aorta. As children are sometimes suffocated by stopping their mouths with foreign substances, it is very necessary in every case presenting signs of suffocation to examine closely the mouth and fauces. Suffocation may be produced by exposing the child to noxious vapors, such as those of burning charcoal or sulphur, the exhalations of privies, etc., and in such cases no trace will remain of the cause of death, except, perhaps, the peculiar odor of the vapor; and no medical opinion could probably be given in the absence of any other testimony. Suffocation may be accidental, to be determined in a measure by the time, place and circumstances both before and after the death of the child, and as bearing thereon, the habits and character of the mother.

Strictly speaking, the child cannot be said to be suffocated unless it has first breathed; yet in many cases the death is brought about before respiration is established; *breathing is prevented*. Under such circumstances, it would be impossible for the examiner to ascribe the death to a criminal act unless marks of undue violence were plainly apparent.

If the death has resulted from pressure of the body of a child under the bed clothes, the head will be found flattened, the tongue protruding, the eyes half open, a frothy mucus escaping from the corners of the mouth, and the excrements voided.

When a child is drowned before respiration there is no way of verifying that fact. If the child is drowned after respiration its appearance would be the same as in case of an adult. It is generally the case that the child is thrown into the water, mud or filth for the purpose of concealment after it has been killed. Therefore do not too readily concede it to be a case of drowning; the examiner should inspect the body carefully for all signs of wounds or violence; examine the air passages and the stomach for traces of the water, mud and filth in order to be able to say whether the child was alive or dead when thrown in. Examine very carefully the divided ends of the umbilical cord to find whether it is cut or ruptured, and do not trust alone to the naked eye: sometimes a rupture very much resembles a cut and sometimes a place may be found on the cord where an attempt was made to cut it which failed. Where the cord is found lacerated this will tend to corroborate the story of the woman as to its being an accidental drowning.

§ 71. Wounds on new-born child — Dislocations — Burns — Scalds—Poisoning.—Wounds may be found on the body of the child and then the question will arise whether they were inflicted before or after death; whether accidental or not, and whether necessarily fatal. Wounds inflicted upon children prove fatal very rapidly; if the blood effused and coagulated, there can be little doubt that the child was alive when the wound was inflicted; but if blood be found extravasated under the wound or effused around it and still remaining liquid, the examiner may be sure the wound was made shortly after death and while the body was warm. A child may be accidentally wounded by a knife or scissors in severing the umbilical cord; in such cases the wound ought to be on the fingers or toes or some part of the limbs; and the umbilical cord should be carefully examined so the examiner may be sure it was actually cut.

Sometimes pointed instruments are thrust into the fontanelles, the ears, nose and between the vertebra, and in suspicious cases a very careful examination should be made for such wounds. By dissecting out the suspected portion of the skin and stretching it against the light, the smallest puncture can be seen.

Dislocation of the neck is generally accomplished by twisting the head of the child or pulling it backwards.

An examination of the skin of the child will undoubtedly disclose whether or not the child was killed by burning or scalding.

Poisoning of new born children is so rare that it is only necessary to say that of course its effects are the same as in case of adults, which will be treated of hereafter.¹

§ 72. Difficulties of convicting of infanticide.—It must be apparent that the great difficulties to be overcome in order to convict of infanticide are, that it must be proven that the violence was inflicted upon a living child after the child was *wholly born*, and that the death resulted from that violence and that alone. There is such a margin for conjecture in establishing these facts and as the burden of proving their existence is always on the State, when there is thrown into the scale the maxim of the law that all doubts must be resolved in favor of the accused, it is small wonder that few convictions of this crime are recorded. Then, too, a feeling of sympathy is excited for the prisoner, who may have been betrayed and deserted; and the jury knowing that conviction of wilful infanticide means death, are glad of any excuse to allow the prisoner to escape conviction, at least of murder in the first degree. And the feeling may even find a place in the minds of the jury that the killing of a new born child, when perpetrated under the impulse of injured honor and the fear of disgrace, should not be classed with other murders.

No feeling of that kind should, however, take possession of the examiner. A new born child has as much right to its life as an adult, and it certainly should not be regarded in any sense as a proper victim to be sacrificed for the injury inflicted by one adult upon another; and in the absence of the power to make every person in the community see the atrocity of this crime from a moral standpoint, a healthy dread of sure and merited punishment is the next best thing.

§ 73. Air in heart as sign of live birth.—Before passing from this subject, I will call your attention to the theory advanced

¹ Post, Chapter XVIII.

by Dr. F. W. Higgins, of Cortland, N. Y., that the fact of live birth may be demonstrated by the finding of air in the heart. What he says is based upon a case falling within his own practice, and is as follows:

"One Maurice B. Congdon was tried in the Court of Oyer and Terminer in Cortland County, N. Y., for the crime of infanticide; the jury brought in a verdict of manslaughter in the second degree, and he was sentenced to the penitentiary. There is little serious dispute in regard to the main facts of the case. The mother of the infant was Nora Congdon, 17 years of age, daughter of the defendant. The infant was born while the girl was alone in a room; she called to her father, who came up into the room and cut the umbilical cord close to the body, as appeared by the girl's testimony before the grand jury; he then grasped the child's neck by the thumb and finger of one hand, retaining his hold until life was extinct. With the other hand he laid a cloth in the bottom of a light tin pail, laid the child in the pail on its right side, still retaining his hold upon the child's neck, threw the cloth over it, took the pail by the edge and carried it out of the house. Within an hour he buried the pail and its contents in a field two feet below the surface. Twenty-one days after its burial it was exhumed and Dr. Higgins assisted the coroner in the post mortem examination. It was evidently a full term male child, nineteen and three-eighths inches in length; the weight and measurements, and the appearance of the nails, testicles, hair and skin corresponding. It had been born alive, as shown by the evidence of complete respiration. The lungs were light in color, completely filling the enlarged chest. The anterior borders were rounded, that of the right lung within one-fourth of an inch of the median line, the left three-fourths of an inch; crepitant in every part, and every part floating high above the water. The pressure of one hundred and fifty pounds applied twice to a portion from the base of the lungs did not destroy its capacity to float. In short, if the hydrostatic test can prove anything, complete respiration had occurred. An additional sign of live birth was the congestion and extravasation which had occurred

above a line about the neck. Also, in the opinion of Dr. Higgins, the appearance of air in the heart proved the live birth.

The main blood vessels of the heart had been ligatured in floating the heart and thymus gland, with the lungs for the hydrostatic test. On cutting into the cavities of the heart, the auricles were found nearly empty. Both ventricles were found filled with dark fluid blood mixed with an abundance of air bubbles or bubbles of gas. The significance of these was debated at the time, but not clearly understood until it was too late to make some observations which would have rendered the conclusions more convincing.

However, there are but three possible sources from which to account for this appearance of air mixed with the blood of the heart.

Perhaps the most natural theory is that the appearance was due to gas, the result of decomposition. In answer to a letter of inquiry, Prof. A. L. Loomis, of the New York University, wrote Dr. Higgins that he had seen gas in the heart, as the result of putrefactive changes, quite early. This infant had been dead for twenty-one days. But it lay in a tin pail buried in the clay subsoil, two feet below the surface. The weather had been dry and the ground was yet cold. Changes which would occur in one day from exposure to the air, would require eight days in ordinary burial. Considering the circumstances of burial in this case, there should be about the same evidences of putrefaction that would occur from two days' ordinary exposure. The signs of putrefaction actually found were simply small spots of greenish discoloration along the right side and on the outer side of that arm and leg. The epidermis was loose and easily rubbed off over the suggillation on the right side. There was no odor of decomposition discoverable—there were no serous or gas blebs anywhere in the interior of the body; there was no softening of any organ except the brain, which would not retain its shape when the membranes were removed. At the base of the brain was an extravasation of blood estimated at one ounce. The exact location of this was in the sub-arachnoid space in the left middle and posterior fossæ of the cranium and also filling the upper part of the spinal canal. This blood

was dark and fluid, but not mixed with air or gas, although the brain contiguous to it was softened. It is possible that putrefactive germs may have gained entrance at the cut end of the umbilical cord, and induced a change in the blood even as far as the heart. The cut end of the cord, however, showed no evidence of decomposition; a little dark fluid blood was noticed upon it. A few experiments, made by exposing beef blood to the action of the air, seemed to indicate that gas is not developed easily from it: not at least, until the odor becomes unbearable.

A *second barely possible* origin for the air found in the heart is suggested by the following:

In the case of a woman who had been strangled by the use of the hands by two men, Littré found the tympanum of the left ear lacerated, and from it flowed about an ounce of blood; the vessels of the brain were unusually turgid; red blood was extravasated in the ventricles, and also on the base of the cranium; the lungs were greatly distended, and their membranes very vascular. Not more than an ounce of blood, however, was contained in the right ventricle of the heart, and it was fluid and frothy, like that of the lungs.

In that case the air must have found its way through the texture of the lungs, into the pulmonary veins, and so into the heart. If this were possible in any case, it did not occur in the case of this child. There was no sign of rupture of the lung substance. The lungs were not even engorged with blood. The absence of over filling of the internal organs of the chest and abdomen is accounted for in this case by the open umbilical arteries, affording an outlet for a certain portion, and by the large amount extravasated at the base of the brain, and filling the veins of the brain and head. Also the less relative amount of blood in the infant must be taken into consideration.

The only theory remaining to account for the appearance of air in the heart, would be that it was drawn in through the cut end of the umbilical vein during the respiratory efforts while strangling. That air may enter a vein, reach the heart, and cause alarming symptoms or sudden death, is well known to surgeons. The circumstances necessary for its occurrence are the opening of a large vein near the heart, some reason for the

cut end not closing from its natural flaccidity, and a deep, gasping respiration to exercise suction. For this latter reason this accident was more common before the days of anaesthetics.

In the case under consideration all the elements necessary to the occurrence of this accident were present. But one-quarter of an inch of the cord was left attached to the body unligatured. The violent spasmody movements of the abdomen during strangulation would open the umbilical vein intermittently, at least. In through this vessel, but a moment before, the whole of the infant's blood had been coursing; a distance of about two and one-half inches would reach the vena cava, from which the course is broad and direct to the heart. The suction power exerted was the greatest possible. The return of blood from the head—disproportionately large in the infant—was entirely cut off from the heart. The heart was beating wildly, with a tenacity to life belonging to the new-born. This, *vis-a-fronte*, would tend to draw in air through the open channel to supply the place of the blood imprisoned in the head and lost by the umbilical arterics. Still more powerful would be the suction force exerted by the respiratory efforts. With the trachea compressed by the strangulation at the neck, none, or very little air enters the lungs. This sense of want of air causes these efforts to become more severe. It is easy to understand that air will rush into such a vacuum, if there be any avenue.

The explanation of these air bubbles being found in both sides of the heart easily suggests itself. By the foramen ovale, as yet partially open, the entering current from the ascending vena cava would still enter the left auricle and so the left ventricle. The descending current of blood being almost entirely shut off, the irregular action of the heart would naturally force the blood into either side of the heart.

On removing the liver, the large blood vessels were cut off just below the diaphragm. From these frothy blood escaped. It is impossible to say whether this was from the aorta or vena cava.

If further research or observation in cases where no suspicion of putrefactive origin be possible, shall show that air is drawn into the heart in cases similar to the one related, it may be seen

that this sign will be important. The evidences of complete live birth are remarkably few and unsatisfactory. If, upon post mortem examination, this sign should be found, it will be positive proof that death had not occurred until after birth was complete. Nor could it have been produced until the cord—the last bond to the mother—had been severed.²

§ 74. Insanity at child birth.—Another subject to which attention should be directed in this connection is that of insanity in child birth. Dr. Lusk has said well and truthfully that “when we remember the marked perturbation of the nervous system, in even normal pregnancy, from reflex action, from disorders of the digestion, from the deprivation of the blood, it is not strange that the same conditions which give rise to moral perversities, to the loss of memory, to hysteria or hypochondria, should likewise prepare the way for the more pronounced forms of mental derangement. In character the psychical disturbances of child bearing women do not differ from those that develop under ordinary circumstances, but so active are the causes during the period in question that of the insane who crowd the public asylums, it is said that in one-eighth the malady is of puerperal origin.”³ So powerful is the effect of pregnancy in this direction that it is said many women go through other causes of depression without suffering nervously, and yet become insane with each pregnancy or each delivery. So delicate is this influence, that this phase of insanity occurs only with male pregnancies in some and in others only with female children. The form of insanity exhibiting itself at these periods may be mania, melancholia or dementia, and it may approach slowly or develop suddenly.³ Such attacks are more liable to come on with the birth of the first child, but may come during pregnancy, parturition or lactation. Dr. Barker says that in this class of cases moral emotions are a great exciting cause. Social ostracism as a punishment for lapse from virtue adds to the terror of the situation in those whose condition publishes their shame. Many alienists concur with him in this opinion.

² 6 Med. Leg. Jour. 69.

³ 7 Med. Leg. Jour. 6, 7.

Esquirol estimated the relation of moral to physical causes as four to one. Weil as twelve to six. This last consideration becomes especially important in cases of infanticide following seduction, or the birth of an illegitimate child. The situation under such circumstances must assume an importance in the minds of most females almost, if not wholly, impossible to imagine. Some authorities declare that the shame and mental distress usually attending the birth of illegitimate children makes insanity twice as common then as after the birth of legitimate children, and others give a much higher rate.

A careful examination of the authorities upon this subject shows:

1. There is undeniably a close relation between the sexual organs and the mind.
2. During the period of pregnancy there is great physical disturbance, which may, and in many cases does, disturb the mind and cause well marked insanity.
3. This mental disturbance may appear at or just after labor.
4. Moral causes greatly increase the danger, hence in mothers of illegitimate children its occurrence may be expected.
5. The mental disturbance in these cases is likely to result in infanticide.

The peculiar symptom in this phase of insanity is that of aversion to the child. Dr. Hammond says that the first peculiarity "is such a change in the natural instincts of the mother as to cause her to acquire a feeling of the most determined aversion to the child of which she has just been delivered."⁴

Dr. Savage says, "with puerperal insanity there is commonly a dislike both to husband and child; there being in one case a nervous irritability which prompts the mother to get rid of the crying child which disturbs her rest; or, on the other hand, she may not believe the child is hers at all, or she may think its birth has alienated her husband's affections. * * * She may have some delusion, fancying that the child will be starved, or that it is already suffering from serious ailment, or she may kill it simply to send it out of this world into a happier state.

⁴ 7 Med. Leg. Jour. 14, 16.

* * * A mania transitoria may arise suddenly and pass off as quickly in which she may injure her child. Medico-legally speaking this condition is of great importance, because during this period of excitement the mother may commit infanticide, and not only be guiltless, as far as responsibility is concerned, but may not have the slightest recollection of what has taken place. In all these cases, the murderous act may be done without premeditation, and with little or no recollection of what has happened.”⁵

Knowing that women during pregnancy and parturition are thus subject to attacks of insanity, the examiner must be more careful in his investigation of such cases and should remember that the more the acts of the mother differ from her ordinary conduct and actions; in other words, the more she is unlike herself, the greater is the improbability that her act is that of a sane woman. Especially should these considerations influence him where the child is illegitimate.

⁵ 7 Med. Leg. Jour. 1.

CHAPTER X.

CRIMINAL ABORTION—PRESUMPTION OF DEATH AND SURVIVORSHIP—LIFE INSURANCE.

§ 75. Criminal abortion—Its prevalence.	§ 81. Confidential communications.
76. Premature labor.	82. Duty of physician.
77. Laws against abortion.	83. Presumption of death.
78. Definition and causes of abortion.	84. Presumption of survivorship.
79. Examination in abortion.	85. Life insurance.
80. Appearance and size of uterus.	

§ 75. Prevalence of abortion.—As was said in regard to infanticide, this crime is not confined in its practice, to any one nation or race, and is the most prevalent of any crime known to the law.

Although this crime was not forbidden by the Mosaic law the Jews are, and always have been, singularly free from practicing it. Many people do not regard it as a crime or condemn it.

Do not suppose that this crime numbers among its devotees only the low, the vile and those who have been unfortunate. A physician will doubtless be surprised, before he has had many years of practice, to find that those who are classed among the higher orders of society, intellectually and financially, married women, who are considered good and pure by the community in which they live, have very loose and vague notions of the criminality of this act. That they will not only practice it, but defend it, and worst of all, encourage others to practice it and become their instructors. Women who have children apparently dear to them, as well as those who do not want to be bothered with children, will come to him seeking his aid in getting rid of their unborn offspring.

This is what a distinguished physician says: "Every man who undertakes the practice of medicine, is met upon the

threshold of his career by what I do not hesitate to pronounce one of the most powerful, baneful, damning combination of temptations that can possibly assail the human heart. All that is good, all that is evil within him, is subject to the utmost pressure that can be brought to bear by the combined influences of pity, sympathy, and sometimes, greed. Youth and beauty on bended knees, with clasped hands and streaming eyes, implores help with more devoted earnestness of purpose, with more burning reality of feeling than that with which it approaches the throne of grace. The emotions of the heart are appealed to, the processes of the mind are assailed by specious arguments, and last of all, there is an *argumentum ad hominem* unworthy though it be, that like a feast to the famished wayfarer, is held out to the struggling physician who has found little for honest and willing hands to do; all this is heaped on, to weigh down the balance of conscience, and wrest from him a reluctant consent to do murder. This temptation comes to every physician. It comes, I say, in the guise of repentance, humility, despair. Nothing is wanting to make it supreme, and woe to him who is applied to, if his courage falter.”¹

§ 76. Premature labor.—But it is sometimes necessary to perform an abortion. Premature labor is frequently induced in legitimate medical practice, for the purpose of avoiding the risks which in some cases attend parturition at full term. The pelvis is sometimes so deformed, that a mature child cannot possibly be born alive. The choice, in such cases, lies between the Caesarian operation and an artificial premature birth. The proportion of children born at seven months that live is, of course, smaller than if they were carried to the end of gestation, and could be delivered; but, as in the cases of deformity alluded to, the child’s life must inevitably be sacrificed by birth through the natural passage, it becomes a vital question how its life may be preserved with the least risk to the mother. The statistics of the results of the Caesarian operation, which is much more successful than formerly, give no cheering view of its value;

¹ Dr. Junius C. Hoag, 8 Med. Leg. Jour. 116.

the danger to the mother's life is infinitely greater than in the induction of artificial labor, which, in fact, in competent hands is a trifling operation. The average number of children saved by this means is rather more than one-half of the cases operated upon. The practice which, when first proposed, awakened some doubts as to its morality, has now received the sanction of the highest medical authorities, and is universally regarded as justifiable and beneficent. Although deformity of the pelvis is usually the motive for the operation, it may be properly employed in other cases, as, for example, in women whose children habitually die before the term of gestation is reached, or who are suffering from diseases the danger of which is much heightened by the continuance of pregnancy. Yet the propriety of its employment in the latter case has aroused much discussion; the sympathetic phenomena of pregnancy are often far more alarming in appearance than in reality, and will rarely justify any interference with the natural progress. So that while it is often necessary to perform an abortion no physician should ever perform it until he is satisfied that it is necessary to preserve life, nor until he has counselled with some other and more experienced physician, and should never perform it except in the presence of at least one other physician, so that everything may be open to the light with no attempt at concealment. He should never yield to the solicitations of man or woman in this matter unless his own judgment, combined with that of his associate physician, convinces him that it is necessary and proper.

It is said that when the last wife of Napoleon the Great was being delivered, the doctors submitted to him the question: "Shall we save the mother or the child?"—knowing how anxious he was for an heir. He said: "Save the mother." And so would every man respond, but his first wish would be to save the mother *and child*.

§ 77. Laws against abortion.—Laws have been enacted by the different States directed against those who with intent to procure the miscarriage of any woman, prescribe or administer to her any medicine, drug or substance whatever, or, with like

intent, use any instruments or means whatever, unless such miscarriage is necessary to preserve her life, or is advised by two physicians to be necessary for that purpose, making the same punishable with imprisonment in the penitentiary for varying terms of years. These laws are subject to criticism in that they do not provide a greater punishment for a physician than for one who is not a physician, to procure an abortion, and because the crime is not treated in all States as it ought to be and called murder. The consent of the woman does not lessen the degree of the crime.²

They are to be commended in that they sweep away the absurd distinction between a woman quick with child and not quick with child, and materially simplify the investigation. It is right that this distinction should be dropped, with the other absurd theory that a child does not *live* until it quickens; now we know that from the moment of conception the child lives, and is justly entitled to its life, and that the crime is no less a murder when committed in the first month than in the ninth.

§ 78. Definition and causes of abortion.—By abortion is commonly understood in medicine the expulsion of the contents of the uterus, before the sixth month of gestation. If the expulsion takes place between the sixth and ninth month the woman is said to have premature labor. The law, however, makes no distinction as to the time of the expulsion, but the term abortion is applied to the expulsion of the foetus at any period of pregnancy. It is sometimes asserted that criminal abortion is rarely attempted before the third month, and is most common in the fourth and fifth months, but if full statistics could be obtained it would be found that the first or second month is the time when most frequently abortion is produced. The reason given for fixing the third, fourth and fifth months is stated as being that then for the first time the woman acquires a certainty of her pregnancy. However true it may be in regard to abortions produced with the assistance of others, that they occur in the third, fourth and fifth months most fre-

² State v. Lodge, 9 Hous. (Del.) 542, 33 Atl. 312.

quently, most women do not wait for a certainty, but as soon as there is a cessation of the catamenia begin the abortion by dosing themselves with various herbs and drugs.

It is not uncommon for an abortion to be produced by natural causes. With some women it seems to be habitual, every pregnancy resulting in a miscarriage in the early months of gestation, and this in spite of every effort on their part to prevent it. This tendency is said to be greatest at the menstrual periods.

A fact of some medico-legal importance in connection with this subject is, that *natural* abortion usually occurs about the third or fourth month, and the ovum is nearly always expelled entire, *i. e.*, the membranes not ruptured. But as criminal abortion is usually produced about the same time by perforating the membranes, of course, the foetus would, in that case, be expelled first, and the placenta and membranes afterwards. This latter circumstances would be of great significance in determining whether the abortion was natural or not and might aid materially in the diagnosis of the case.

Any disease that affects the uterus or the general system of the woman may bring on abortion; a shock or fall, disease of the placenta or foetus, the death of the latter, syphilis, small pox or other constitutional disease of the mother, or which may be occasioned by various causes accidentally producing weakness may produce it; or any causes which relatively to the strength of the female, are violent and sufficient to bring on uterine contractions, although harmless under ordinary circumstances.

At the same time a natural tendency to abortion will not mitigate the criminality of the act of procuring it. In truth, abortion can rarely be designedly effected, unless by mechanical means, where there is not a predisposition to it; hence the violence and fatality of the measures which are sometimes used to accomplish it. The cases are, indeed, too familiar to be deserving of special record, in which, after the most violent bodily injuries, women have not aborted, but carried their children the full time and been safely delivered. An example of this is the case of the woman who, in the fourth month of her pregnancy, received a severe fracture of the skull from a blow

with a hatchet, for which she was under treatment nine weeks, and yet she was delivered of a healthy child at the full term of gestation.

During pregnancy the uterus is subject to natural periodical excitement corresponding to what would have been the menstrual period, and at such times very slight causes may lead to the expulsion of the foetus.

The violent causes of abortion are either accidental or criminal, and generally it will not be difficult to determine to which of these causes the result is attributable, as the means and amount of violence are very perceptible.

Abortion may be produced by mechanical means or the use of irritating medicinal substances acting on the uterus and bowels, although medicines generally supposed to be capable of producing abortion are rarely effective for that purpose and generally are disastrous to the mother.

Venesection has seldom a tendency to produce abortion. On the contrary, there is said to be no remedy more in vogue for warding off a threatened abortion than this, and numerous authors say that pregnant women have been bled many times in succession without this result ensuing. Nevertheless when pushed to the extent of causing syncope it may have that effect. M. Depaul relates an instance in his own practice, where a woman, apparently suffering with severe headache, in two successive pregnancies applied to him for the purpose of being bled. He afterwards discovered that the bleeding in these and on one previous occasion had destroyed the foetus, and that he thus had ignorantly seconded the intentions of the mother. Suction of the nipples by the mouth or by cupping glasses has occasionally been resorted to for the production of premature labor. These causes operate with greater certainty, just in proportion as the pregnancy has advanced.

§ 79. Examination in abortion.—When a physician is called in a case of suspected abortion, his first duty should be to examine carefully any substances that may have been discharged from the womb. Having ascertained that these substances are the products of conception, it may be necessary for him to de-

termine the means used to procure the abortion; whether due to natural causes, to the use of drugs, or to violence. To determine this he will have to form his opinion as to the sufficiency of the means employed to procure the miscarriage. And he may have to examine the woman suspected of the crime for the purpose of determining whether she has been recently delivered. So that three different examinations will have to be made:

1. An examination of the substances expelled from the womb. This is necessary, in order to determine *their human character* and *their probable age*. Other bodies are sometimes expelled from the womb which, while bearing some resemblance to the human embryo, are not always the products of conception. Most frequently, however, they are the products of conception, but in a diseased condition. The substances called moles and hydatids, which are sometimes found, are of this description. In cases of difficult menstruation, substances are sometimes expelled which by some might be mistaken for an early ovum. These are in some cases false membranes, occasionally discharged entire and preserving the shape of the uterine cavity; in others, again, they are membranous concretions originating from coagula of blood and ought to be easily detected.

2. An inquiry as to the cause of abortion.
3. An examination of the woman supposed to have miscarried.

In examining the substances expelled from the womb, the physician ought not to have any difficulty in determining whether they are the results of abortion, unless in the very early stages of pregnancy; thus the distinction is very clear between an ovum and a polypus discharged from the uterus, since the latter has attached to it the remains of its pedicle, and is of a distinct and different structure. These substances should be carefully cleaned and macerated in water to dissolve the coagula.

Of the various substances which may be discharged from the uterus, those which are called moles and hydatids are diseases of the appendages of the embryo, and even if no trace of the latter remains, yet the existence of these peculiar degenerations places the fact of impregnation beyond question; while on the

other hand the products of diseased menstruation are so different in appearance and structure as to be recognized as such without difficulty. The probable age of the ovum or of the foetus is ascertained from a consideration of the degree of its development, as has already been described.³

In case of the employment of mechanical means for the production of abortion it usually happens that marks of their use are apparent upon the foetus, and by careful examination can be discovered. Various have been the instruments employed, and some of them cruel almost beyond thought. In one case a wooden skewer was introduced into the uterus; in another a pair of tailor's scissors; and a common knitting needle or even a lead pencil sharpened, is a favorite instrument with others. The use of instruments for such purposes, in order not to produce the most dire result, requires a practiced and skilled hand, for the operation is of an exceedingly delicate and difficult nature, and if one who is familiar with the anatomical arrangement of the parts involved is necessarily required to be very careful, great danger necessarily attends the use of instruments by the mother herself rendered desperate by her condition; or by her paramour or, as is frequently the case, by designing quacks. In case death results, a careful anatomical examination will reveal the crime; but if the woman survives, a medical examination of her will not reveal much, if anything, of the methods employed. Blows upon the abdomen are frequently applied to bring on an abortion, and if successful a very free hemorrhage will be found attendant upon the delivery, for the reason, that in case of blows the placenta has become partly or wholly detached from the uterus.

The signs of abortion as obtained from an examination of the suspected mother, if living, are not very certain in their character. It is seldom that an examination of a living female is had, especially at a sufficiently early period after the miscarriage to afford any valuable information. When abortion occurs in the early months, it leaves but slight and evanescent traces behind it. The open state of the womb may, in some

³ *Ante*, §§ 57, 58.

cases, throw light upon the question. All the signs which are indicative of a delivery are more apparent in the latter part of pregnancy. A speculum will be needed to see the lacerations in the os uteri, and they may be felt by the finger of the examiner.

In making a post mortem great care should be used in removing and laying open the uterus, as counsel or opposing medical witnesses may suggest that the examiner produced the wound. The specimen should refute such a charge. The examiner should make clear and full notes, with measurements, at the time.

Although not always possible, it is generally easy in a dead subject to distinguish the results of violence from natural and spontaneous ruptures, when death has followed within three or four days after the attempt to procure the abortion; but if the woman survives three or four weeks it will be almost impossible to determine it by the autopsy, since all the usual signs will have disappeared. Peritonitis, when the result of violence, is generally more localized than when it is, so to speak, spontaneous, in puerperal cases at full term. The history of the case will sometimes help the examiner.

A spontaneous rupture of the uterus generally causes a sudden cessation of the labor pains. Artificial injuries, on the other hand, bring on pains.

In examining stains on clothing or bedding, remember what substances are expelled at the time of delivery and their peculiar characteristics, such as odor, etc.

In a fatal case of criminal abortion, the first duty of the physician is to ascertain how far this is to be ascribed to the means employed. For this purpose, he would most carefully examine the vagina and uterus for marks of injury by the use of instruments. In these, particularly, the punctures are often multiple; wounds made before death may be distinguished by reason of their being cicatrized or coated with lymph, pus, or blood. Wounds on the walls of the vagina would indicate the use of instruments by an inexperienced hand; whilst perforations of the neck of the womb and sometimes of its fundus, indicate the use of pointed instruments, very possibly in the hands of

a professional abortionist. In some instances a blunt instrument, like a male catheter, is employed; and in a case which was examined by Dr. Reece, the attempt to perforate the membrane seems to have failed, while the instrument employed passed up between the membranes and the uterine walls, and tore the placenta, producing fatal hemorrhage. In cases of instrumental violence, there will frequently be discovered marks of metritis and peritonitis. The stomach and bowels should always be carefully inspected for effects of irritant poisons, such as redness, and also for the remains of the various reputed abortives, as powdered cantharides, tops of savin, ergot, oils of savin, tansy, pennyroyal, etc. The latter may sometimes be recognized by the odor; or they may be separated by distillation or by ether.

§ 80. Appearance and size of uterus.—The examiner should also carefully examine the condition of the uterus and its appendages, so as to form, at least, an approximate estimate of the period of pregnancy. The uterus in the unimpregnated (normal) state, is (according to Montgomery) about two and one-half inches long, three-fourths of an inch broad and one inch thick. Its size, of course, gradually increases as pregnancy advances, according to the following average: Very little change occurs during the first month; during the second month, it enlarges considerably; at the end of the third month, its length is five inches, of which one inch is for the cervix; at the end of the fourth month, it is five inches long from the fundus to the beginning of the cervix; at the end of five months, its length is six inches; at six months the length is seven inches; at seven months it is eight inches; at eighth months it is nine to nine and one-half inches; at nine months it is ten and one-half to twelve inches in total length.

If death should occur from hemorrhage at full term no contraction of the womb will have taken place; but if the woman survives for a few days, there will always be more or less contraction of that organ. In two days after delivery (at full term) the womb will have contracted down to seven inches in length and four in width; after one week, it will be five or six inches long and two wide; after two weeks the length is four

or five inches, and the width one and one-half inches. At the end of the second month it will have attained its normal size.

Its *shape* also changes, as well as its size. In the unimpregnated state, it is flat, pyriform and somewhat triangular. After impregnation, it assumes somewhat of a globular form; but no change of consequence occurs in the cervix until about the fifth month, after which it progressively shortens, losing one-fourth its length in the sixth month, another fourth in the seventh month, still another fourth in the eighth month, and at the close of the ninth month, or full term, becoming entirely obliterated so that, at this period, the shape of the uterus is ovoid.

The thickness of its walls at full term is about that of the unimpregnated condition—one-third to two-thirds of an inch; but in a few hours after delivery, under contraction, its thickness increases, often to two inches.

The *uterine vessels* undergo very considerable enlargement in pregnancy—especially the veins, which attain such dimensions as to be denominated sinuses, at the position where the placenta is attached. The ligaments of the uterus likewise share in the general change. The broad ligaments become gradually effaced, in consequence of being absorbed (so to speak) in the increased development of the uterus. The round ligaments increase in thickness. Both become extremely vascular.

The Fallopian tubes increase in size, become less convoluted, and are much more vascular. Usually that one through which the ovum has passed is somewhat the largest.

The ovaries also share in the general increased vascularity. That one from which the ovum escaped displays a peculiar fullness or prominence at one portion of the organ. If this is cut open a yellowish looking body will be observed, named corpus luteum, before described.⁴

It should not be forgotten that all the above signs of abortion may occur after the expulsion of hydatids and moles; also, that a corpus luteum may be found in the virgin state.

⁴ *Ante*, § 53.

§ 81. Confidential communications.—Where a physician is called to attend a woman upon whom an abortion has been committed, her statements to him are confidential and cannot be disclosed; neither is the opinion of the physician that an abortion has been committed, founded partly on such communication, admissible in evidence. In any view of the case her declarations made after the abortion was committed are not admissible in evidence against a person charged with her of the crime of abortion.⁵ And it has been decided that if the woman testifies against the alleged abortionist, her testimony must be regarded as that of an accomplice and therefore needing corroboration.⁶

Another well settled rule of law, and one which in many cases prevents conviction, is that in many of the States in cases of abortion the dying declarations of the woman are not admissible as evidence against the accused. And for the reason, that the rule admitting such declarations applies only to homicidal cases, and the offense of abortion (while the death of the mother or child constitutes an important collateral factor in establishing the offense charged), is not within the issue, and the facts constituting the offense cannot be established by her declarations. In other States, however, such declarations are admissible, and in my judgment it would be wise to make them admissible in such cases, so that the law might not seem to screen criminals.⁷

§ 82. Duty of physician.—Dr. Walter Channing, of Massachusetts, referring in 1859 to the difficulty of obtaining a conviction for abortion, said: “I believe there has never been one in this State, this moral State by eminence, and perhaps in none is this crime more rife.”

It is the duty of physicians to rid their profession of abortionists. This may be promoted by the active co-operation of the physicians with the prosecuting attorneys of their respective counties. Let them volunteer their services and advice to the

⁵ People v. Murphy, 101 N. Y. 126, 4 N. E. 326, 54 Am. Rep. 661.

⁶ State v. McCoy, 52 O. S. 157.

⁷ *Ante*, § 12.

prosecuting attorney. Instruct him how to work up his proof. There will always be those among the physicians who will assist gladly in this work. Accept the stigma of persecuting these fellows; they ought to be persecuted and punished, and when reputable physicians make it their bounden duty to persecute them they will soon drive them from the community.

The conduct of some physicians in regard to this crime is as criminal as labelling a patent medicine: "Do not use during pregnancy." Now, it is against the law to sell medicine to produce abortion and this manufacturer could not advertise that his medicine would do that, nor do I know that it would. Yet what would one suppose from that label? Why, naturally that it was not to be used during pregnancy, because it would produce a miscarriage; and stamped it at once as an illegal medicine. So with those physicians who protest that they are not abortionists, but prescribe medicines that will produce abortions without asking any questions.

This method of advertising finally came to the attention of the lawmakers, and in many states it is made a crime by any sort of advertisement to warn women against the use of a medicine when in a state of pregnancy, the same as if they were advised that a medicine would produce an abortion.

§ 83. Presumption of death.—The question of the presumption of death may be raised when a person goes away from home and is not heard of for many continuous years. The law will, in that event, regard him as dead, or presume his death, and his administrator or executor may proceed to settle his estate. This presumption, however, is not conclusive. Although a man's estate may be administered upon, upon the presumption that he is dead, and distributed to his heirs, if afterwards he returns he may compel the heirs to restore his property to him. The question in this form is not unfrequently raised by life insurance companies, where the party insured has not been heard of for many years and his lawful heirs demand the payment of his policy.

It may also be considered in cases where a husband deserts his wife or *vice versa*; or where either married person leaves the

other and remains continuously away; or where the party going away without the intention of remaining, is not afterwards heard of for a succession of years.

A mere rumor that an absent party is dead or living can not be received in evidence either to aid or rebut the presumption of life.

The length of time usually regarded as legally warranting a presumption of death, in any of the above cases, is seven years from the time the person was last heard from; so that, in case of married persons it is not regarded bigamy if the other party should marry again after the expiration of seven years of continuous absence of the consort without being heard from, or being known to be alive.

Where a woman was married a second time, and it appeared that she had heard nothing definite, at that time, as to her first husband for nearly seven years, in the absence of proof that the first husband was alive at the time of the second marriage, such marriage, in a suit for divorce instituted sixteen years after her last information regarding her first husband, will be considered valid.⁸

In cases of heirship and property, and in some cases of life insurance, it is often not considered necessary to wait the whole seven years, but a settlement *has* been made by the courts or company in two years.

The presumption of death must depend on general evidence, being a presumption of *fact* to be determined by the jury.

There are cases, however, of a special character, where the courts have decided the presumption of death to be sooner or later than the period of seven years; as, for instance, if the individual concerned was in feeble health when he or she was last heard from. Such a case as that would involve medical evidence as to the probabilities of life.

§ 84. Presumption of survivorship.—The question of the presumption of survivorship, which is both interesting and intricate, has very frequently been the subject of legal inquiry. It

⁸ Johnson v. Johnson, 114 Ill. 611, 3 N. E. 232, 55 Am. Rep. 883.

may arise in cases where two or more persons have died within a very short time of each other and in the absence of any witnesses. Accidents, such as fire or shipwreck, may destroy persons and the question of how their property shall descend may depend upon which one survived the longest. It is not expected that medical science can conclusively or absolutely establish which was the survivor, but it may lay down certain principles which, in the absence of any certainty, may determine the question.

In ancient times courts were inclined to abide by certain arbitrary rules in regard to survivorship, and held that persons under fifteen *must* survive those over sixty and between fifteen and sixty the males *must* survive.

The more modern rule is that where two or more persons perish at the same time, and by the same accident, in the absence of testimony there is no presumption of survivorship; but the presumption is that all perished at the same time, and therefore the inheritance shall pass where the law would naturally place it.

Thus, where three sisters perished in the same disaster, and there was no way to determine which died first, the rights of succession to their estates were determined as if death occurred to all at the same moment.⁹

An examination of some of the theories and some of the cases upon this subject may be of some importance in cases, where the evidence is conflicting.

Generally, the male survives the female, except in cases of suffocation or asphyxia. This exception arises from the fact that women consume less oxygen than men and are less subject to asthma. This has been verified in a number of cases. A girl and a young man were exposed in the same apartment to coal gas. When found he was dead, but she, although she had been exposed ten hours, recovered.

In the catacombs near Maestricht in the Netherlands there is a labyrinth from which, when the way is lost in the dark, it is almost impossible to escape. Among the mummies which are

⁹ Marie H. Wilbor, 20 R. I. 126, 37 Atl. 634, 78 Am. St. 842.

found in the passage is one of a Leipsic student, whose name is not recorded. This much, however, is told of him. He was a man of much beauty and many accomplishments, and was preparing for a professorship. An attachment sprang up between himself and the daughter of a rich merchant from Leipsic. The father refused his consent, and the young couple eloped and hid themselves in Maestricht. They were followed there, and finally took refuge in the catacombs, thinking that they could readily conceal themselves there for a few days. Their track, however, was followed, and at the end of the third day they were discovered in a remote hole. The husband was dead, and his body is the mummy just mentioned. The wife was resuscitated, and lived to an extreme old age.¹⁰

Attention in cases of suffocation, however, should be paid to the location of the parties found, particularly with reference to the doors and windows.

In cases where the danger of death is increased by struggles, the female may be supposed to survive.

Between twenty-seven and fifty years of age no presumption of survivorship can arise, and hardly any between fifteen and sixty.

Where parent and child perish and the child is above the age of puberty, the child is supposed to survive; and dies first if below that age. The fat die quicker than the lean. Sanguine and choleric outlive the melancholy and phlegmatic.

The timorous perish before the courageous, bearing in mind always the great distinction there is between muscular strength and power of endurance, and they do not often meet in the same person. Muscular strength is often greatest in the so-called lymphatic temperament; power of endurance in the bilious.¹¹

When a person is suffering from disease, other things being equal, that will probably produce the speedier death.

In cases of death from drowning, men survive women; swimmers those who can not swim; to offset these presumptions is the likelihood that a blow may have deprived the swimmer of

¹⁰ 2 Wh. & St. (part 2), § 1025.

¹¹ 2 Wh. & St. (part 2), § 1029.

his powers; and the dress often hastens or delays a fatal result when a person is thrown into the water. Boots soon fill with water and interfere with swimming. A woman's clothes, as lighter, and often exposing a greater resistance to the water than those of a man, may act as floats to keep the body a few moments longer on the surface. A power to hold in respiration, or a condition of the body that permits this, presumes a longer struggle.

Inquiry should be made, also, whether the death was by apoplexy or suffocation. Persons of apoplectic tendencies are very apt to be struck with the disease when suddenly precipitated into the water, and when this is the case, death is presumed to have been earlier than in ordinary cases of suffocation. In cases of explosion the weaker reach the water last.

The young and old bear heat better than the adult. The difference between the sexes in the capacity to endure heat is not well ascertained. Fodéré relates a case where an Englishman and his daughter of seven years of age crossed the desert of Syria to the Persian Gulf, each being precisely in the same circumstances; the father perished, but the child reached her journey's end in safety.¹²

Middle-aged men bear cold better than young children or old persons; men bear cold better than women; the amount of clothing, the physical condition, and the immoderate use of alcohol, must all be considered before arriving at a conclusion. The debilitating effects of poverty, entailing a bad nutrition, and also of intoxication, as being especially obnoxious to the effects of cold, should not be overlooked. The perishing of drunken people on a cold winter's night is a too familiar occurrence.

The aged require less nourishment than adults and adults less than children; corpulent persons exist without food longer than the emaciated; access to water will prolong life where there is no food.

Where mother and child died in child-birth, the presumption is that the mother survived the longer, because the child might be still-born, and also because its life might be endangered by delay, and it would be more exposed to danger without assist-

¹² 2 Wh. & St. (part 2), § 1047.

ance, such as strangulation by the cord or suffocation in the discharges of the mother. In one case which is reported, where the mother and child both died during delivery, the succession to a large landed estate depended upon which survived. If the child survived the father was entitled to the property; if the wife, her relatives would inherit it. On the trial it was proven that the child was born alive, and from that circumstance it was decided that the child was the survivor.

Where a mother died of nervous attack, during, but before the birth, and the child was in good position, and there was no mechanical hindrance to the birth, the child was decided to be the survivor. That an unborn child can survive its mother, and even live when cut from her body after her death, is proved by many cases. Even a day after the execution by hanging or otherwise, of pregnant women, children have been taken from their bodies. It is hard to understand what possible excuse could be given for inflicting capital punishment upon such women.¹³

Where two newly born twins died, the question of survivorship was decided by the fact that one child remained, at the time of the injury, attached to the mother by the umbilical cord, while the other had been severed.

In cases of wounds the question rarely arises, but if it does the nature and location of the wound would have much to do with it, and where the severest wound is found, there death is supposed first to have ensued.

In cases of poisoning dissection alone gives very little aid in determining this question. The marks on the body are often the most unequivocal in cases where the suffering was the most protracted. Cases are well known in which one person gave another poison and afterwards took it himself, and in which the giver survived.

In cases of crushing or burying alive, the examiner must consider the age, the corporal energy, the sex, and the position of the corpse. Younger persons, in this kind of death, survive the older. After the Calabrian earthquake the children who were buried alive were found to have survived their parents. Where

¹³ 2 Wh. & St. (part 2), § 1054.

the question is of continued respiration, the presumption of survivorship is with children, with whom loss of breath can be longest borne. When the lungs are sound, the possessor will be presumed to have lived longer than where the lungs are weak, so as to cause difficulty in obtaining the necessary air. Men are supposed, from this reason, in such cases, to survive women, though this has been controverted. Signs of struggling at extrication indicate a longer continuance in life than where the deceased appears to have at once succumbed.

Stiffness, coldness, discoloration, degree of putrefaction are all to be taken into consideration in these cases; putrefaction is generally earlier in cases of poisoning, death by lightning and drowning. Where it has proceeded furthest, there death may be presumed to have first occurred.

The law refuses to draw any presumption when there is no evidence at all as to the parties subsequent to the shock, but when there is any evidence, no matter how slight, then proof of distinction of age, health and sex are admissible. Upon such subjects medical witnesses are alone competent to testify.

Many curious cases have arisen involving questions of survivorship, and a number of them are given in the second volume of Wharton & Stille's Medical Jurisprudence, part II.

The following are some of the curious cases found elsewhere.

The first case is interesting from the fact that it introduces a factor not usual and one upon which medical evidence would be useless.

A gentleman who died in Paris left a legacy of \$6,000 to his niece in Dubuque, Iowa, who, it appears, died about the same hour of the same day. The niece dying first, the legacy would go to her uncle's heirs; dying last it would go to her heirs. The question which died first turned upon the relation of solar to true time, which had to be determined by the difference in longitude. If the niece died at 4 a. m. and the uncle at 10 a. m. the instants of their deaths must have been identical. If she died at any time between 4 a. m. and 10 a. m., the hour of his death, she would have survived him. The report of the case does not give all the facts nor the result of the investigation.¹⁴

¹⁴ 16 Ohio L. B. 128.

In June, 1877, John Weldon, his sister, Susan McClurg, and her daughter, Nancy Hite, were murdered on the Weldon farm. William Terrell was convicted of this crime and sentenced to the penitentiary for life, and died there. He was convicted upon circumstantial evidence, and always denied his guilt, so that the circumstances of the murder or the order in which the victims were killed was never known. The bodies of his victims were not found until several days after the murder. The question was which of the three was killed first, the inheritance of the property depending upon the establishment of that fact. The real estate of the Weldon estate was distributed to his nearest of kin, but the rule of law in relation to chattel property was different. A trial was had for the purpose of disposing of Mrs. McClurg's estate, the question then being who of the women died last? The jury found that Nancy Hite died last, and hence inherited her mother's property. Afterwards a case was tried to determine who died first, Weldon or Nancy Hite? The jury returned a verdict that Weldon died first.

The point was this: If Weldon died first his estate descended to his sister, Mrs. McClurg. Then, if she died next her inherited property went to her daughter Nancy Hite, and from her to her relations nearest of kin, uncles, cousins, etc., on her fathers' side. If, on the contrary, the girl was killed first, she never possessed anything, and she and her mother, being killed before Weldon, the Weldon heirs would inherit the property.

In another case a man devised land to his son J. for life, remainder to J.'s three infant children in fee. All the persons named were burned to death together. On the night of the fire, which was very cold, the man who made the will, if he followed his usual custom, slept in a room in the northwest part of the house; J. and his wife and children sleeping in another room east of and divided by a hall from testator's room. The testator was eighty-two years old, and in cold weather a fire was kept up in an unsafe stove in his room, and a lamp was left burning there all night. There was a closet, with a curtain instead of a door, in his room, to which he often went in the night for medicine,

lighting a candle kept there to enable him to see. J. and his wife usually waited on him at night, replenishing the fire, etc. His remains were found under the ruins at the closet. The only person who escaped from the house stated that the fire was under the greatest headway in testator's room, and that the wind was driving it eastward, in which direction partitions and doors would obstruct its progress. The only outcry heard by this witness was from J.'s voice, and the witness saw no one at all. It was shown that death would result quicker from excessive heat than smoke. With these facts before the court it was decided that the testator died before any of the others, and that the children having survived him took the land in fee.¹⁵

§ 85. Life insurance.—The business of insuring lives has assumed such vast importance as to be at this time far in excess of what the most sanguine of prophets formerly thought it would amount to. Almost every man who can pass the medical examination, has his life insured for his own or some other person's benefit. Horace Walpole, writing in 1755, told the following: It having been decided that a man having insured himself and then taken his own life, the policy was void, companies sprung up in England to insure against self-murder, but limiting the amount of the policy to three hundred pounds. To one of these came a man and effected his policy and paid his premium; he then invited his insurers to dine with a company of his friends at a neighboring tavern. The invitation was accepted and all enjoyed a very pleasant dinner. After dinner the insured arose and addressing his insurers, told them that the persons with whom they had dined were all tradesmen to whom he was in debt, and but for their company he would never have been able to pay; but now, he said, I can pay all that I owe, and drawing a pistol from his pocket killed himself.

To the life insurance companies which are now so numerous and whose assets amount up to millions, the opinion which they ask from a physician upon a risk is very valuable. This opinion may be upon any or all of the following subjects:

¹⁵ Will of Abram Ehle, 73 Wis. 445, 41 N. W. 627.

1. Is the life of the person seeking assurance healthy?
2. If not a healthy life, what are the probabilities of life?
3. Has he or she any disease or symptoms of disease which would tend to shorten life? This question is generally accompanied by a list of diseases.
4. Have any of his relatives, remote or near, had any such diseases or died from any of them?
5. Are or were his habits such as tend to shorten life? Or has his occupation a tendency that way?
6. Supposing death to have occurred, was the disease causing death present in the system prior to the insurance? This has reference to the disease and not merely to the seeds of disease, for we all are born with the seeds of mortality within us.
7. Is the presumption of death of the assured, in the absence of proof, such as would warrant the payment of the policy to the claimant?
8. If a body has been found, how long has life been extinct, and is it the body of the assured?

One of the first reasons, and to this day the principal reason, of the refusal to pay policies is because the assured has taken his own life. In all of these cases, or most of them, the company has been held liable because some evidence has been introduced and accepted by the jury as tending to prove that the assured was insane at the time of committing suicide, and is, therefore, entitled to recover the same as he would for any other accidental injury causing death. The question was brought directly before the Supreme Court of the United States, and they decided that: "If the assured, being in the possession of his ordinary reasoning faculties, from anger, pride, jealousy, or a desire to escape from the ills of life, intentionally takes his own life, there can be no recovery. If the death is caused by the voluntary act of the assured, he knowing and intending that his death shall be the result of his act, but when his reasoning powers are so far impaired that he is not able to understand the moral character, the general nature, consequences and effect of the act he is about to commit, or when he is impelled thereto by an insane impulse, which he has not the power to resist, such death is not within the contemplation of the parties to the contract, and the insurer

is liable. Nor is there any difference for this purpose, in the meaning of the expressions, commit suicide, take his own life, or die by his own hand."¹⁶ With but very few exceptions this is the accepted doctrine of the law in all the states of this country and in foreign countries. This is an application of the doctrine of moral insanity to suicides which is better applicable to such cases than those of homicide. In such cases it will be for the physician to say from the evidence whether or not the deceased was able to understand the moral character, etc., of the deed he was about to commit, and was able to resist the impulse impelling him to commit the deed. He may err in his judgment, for he may not be put in possession of the real facts in the case, but only the facts as they appear to be to those most interested in establishing moral insanity.

In an action upon a policy of life insurance a proviso that it should be null and void in case the insured "shall under any circumstances die by his own hand," it was held that the words "under any circumstances" should be disregarded as too general and indefinite, and that the company must prove that at the time the insured took his own life he was not under the controlling influence of insanity, and this, too, although he intended to take his life and understood the physical nature and effect of his act."¹⁷ It seems that there was one insurance company which required a judgment of a United States court before it would admit that a death by hanging did not "result from bodily infirmity or disease." What special disease this was thought to be does not appear. Such a death is considered as caused by injuries "effected through external, accidental and violent means" within the meaning of the accident policy.¹⁸ Questions of this nature are now less likely to occur than formerly for the reason that most, if not all, life insurance companies now write in their policies that they are not payable in case of suicide, whether the assured was sane or insane at the time of committing the act.

In Missouri it was provided by statute that such a provision

¹⁶ *Ins. Co. v. Terry*, 15 Wall. (U. S.) 580; *Insurance Co. v. Rodel*, 95 U. S. 232.

¹⁷ *Insurance Co. v. Schultz*, 40 Ohio St. 217, 48 Am. Rep. 676.

¹⁸ *Crandal v. Accident Ins. Co.*, 120 U. S. 527, 7 Sup. Ct. 685.

in a policy should be absolutely void, and thereafter a policy was written for \$5,000 providing that in case of suicide the recovery on the policy should be limited for \$300. This statute was upheld and the attempt to limit the amount of recovery was held to be void and the company liable for the full amount of the policy.¹⁹

There can hardly be any excuse for a physician erring in the examination of the applicant at the time of taking out the policy. He will be able to act with better judgment and greater care if he remembers his two-fold duty: to the applicant that he may not pay his money for years to the insurance company in the belief that after his death his family will be provided for, when in fact he will only leave them the legacy of a disastrous lawsuit, thus entailing upon them the double loss of protection and insurance; and to the company that it may not accept risks that it will have to subsequently repudiate as unsafe risks, which are an injustice to its stockholders and may entail loss upon other policyholders. It is much better for the applicant to be rejected in the first place than to pay in money with no prospect of any return. And, while remembering these things, be sure to forget the agent who stands by, and whose interest, as a rule, is his percentage of the premiums. What is protection or loss to him so long as he obtains his share of the premiums? Too frequently is he like the purveyor to the American army during the war of the Revolution, of whom Patrick Henry said that his only thought throughout the entire struggle was of "beef, beef," and that his cry of "beef" might have been heard at Valley Forge above the supplications of the starving and at Brandywine above the groans of the dying. Do not let him persuade the physician to gloss over or omit anything. Although the rule is generally, to have the examining physician come to the agent's office to make the examination, it is far better for him to examine the applicant at his

¹⁹ Whitfield v. Aetna Life Ins. Co., 125 Fed. (Mo.) 269; affirmed by C. C. A. 144 Fed. 356, s. c. 35 Ins. Law Jour. 321. Reversed by the Supreme Court of the United States upon the ground that such a provision in the policy was an attempt to evade the statute of Missouri. Whitfield v. Aetna Life Ins. Co., 205 U. S. 489.

own office. Let him obtain from him all the facts he can and supplement them with full notes of his examination. Do not be afraid of being too particular, or too precise, for the examination may return to confront the physician in after years, when it will be submitted to the scrutiny of a jury and the criticisms of his fellow physicians. Dr. Ephraim Cutter, of New York, is authority for the statement that the existence of consumption can be ascertained by a microscopical examination of the blood a year before the physical signs of lung necrosis and breaking down appear, and he says that in examining applicants for life insurance, where there is any reason to suspect its presence, such examination should be made.²⁰

It was held by the Court of Appeals of Kentucky that death resulting from the sting of an insect was effected through "external, violent, and accidental" means, within the meaning of an accident insurance policy. The case is interesting in many of its features, the court further holding that the sting of an insect is the proximate cause of death resulting from blood poisoning caused by the sting; that a declaration of the insured, to his attending physician, that the injury subsequently causing death was the result of a mosquito bite was competent, and that death from blood poisoning caused by the sting of an insect is not the result of "poison in any form or manner," or of "contact with poisonous substances," within the meaning of those terms in an accident policy.²¹ In another case it was held that death results from poison when it is caused by the effect of a shock caused by swallowing aqua ammonia, and that an accident policy providing against the effect of injuries to the body caused by "external, violent, and accidental means," with the condition that it did not cover death resulting from poison does not make the insurer liable where death has resulted from poison accidentally taken.²²

²⁰ 4 Med. Leg. Jour. 20.

²¹ Omberg v. U. S. Mut. Assn., 101 Ky. 303, 40 S. W. 909, 72 Am. St. 413.

²² Early v. Standard Life and Acc. Ins. Co., 113 Mich. 58, 71 N. W. 500, 67 Am. St. 445.

The question whether a disease is continuing or not, and on a post mortem the length of its continuance, is often very important.

Let life insurance, which is designed to be a blessing to the widow and orphans, never prove to be a delusion by reason of the physician's negligence or ignorance.

CHAPTER XI.

MALPRACTICE.

§ 86. Definition and kinds of malpractice.	§ 94. Preparation for and defense of malpractice suits.
87. Degree of skill required.	95. Right to physical examination of plaintiff.
88. Uncertainty of medicine.	96. Liability of a hospital.
89. Duty of surgeon.	97. Measure of damages.
90. Fractures.	98. Advance in surgery.
91. Schools of medicine.	99. Criminal malpractice.
92. Duty of patient.	
93. Liability of physicians and surgeons.	

§ 86. Definition and kinds of malpractice.—One of the lions in the pathway of a physician, especially one just starting in his profession, is the danger of a suit for malpractice. The physician need not fear the result, if such a suit is commenced against him without cause, and the damages, however large, will, in most instances be but poor compensation to the plaintiff if he has a good cause of action.

Malpractice is bad or unskilful practice in a physician or surgeon whereby the health of a patient is injured.¹ Wilful malpractice takes place when the physician purposely administers medicines or performs an operation which he knows and expects will result in damage or death to the individual under his care—as in the case of criminal abortion.²

Negligent malpractice comprehends those cases where there is no criminal or dishonest object, but gross negligence in rendering that attention which the situation of the patient requires—as if a physician should administer medicines while in a state of intoxication, from which injury may arise to the patient.

Under the statutes of some of the states this is a misdemeanor and punishable by fine and imprisonment.

¹ Bouvier Dictionary, *s. n.*

² People v. Lohman, 2 Barb. (N. Y.) 216.

Ignorant malpractice is the administration of medicines calculated to do injury, which do harm, and which a well educated and scientific medical man would know were not proper in the case.³

Wherever any of these forms of malpractice is by the statutes or decisions made a crime, the fact that there may be a prosecution for the crime, does not prevent the party injured from bringing a civil action for damages.

Civil cases of malpractice are of very frequent occurrence on those occasions where surgical operations are rendered necessary, or supposed to be so by disease or injury, and are so performed as either to shorten a limb or render it stiff or otherwise prevent the free natural use of it, by which the party ever after suffers damages. This may embrace almost every kind of surgical operation, but it is said that nine-tenths of all such cases arise from amputations, fractures or dislocations.

The general rule governing in all such cases is that the surgeon or physician is bound to bring to the performance of all surgical and other duties, at least ordinary skill and knowledge. He must apply without mistake what is settled in his profession. He must possess and practically exercise that degree and amount of knowledge and science which the leading authorities have pronounced as the result of their researches and experience up to a time, or within a reasonable time before the time of the alleged malpractice.⁴

McClelland has defined the three kinds of malpractice as follows:

1. "*Ethical Malpractice*," in which persons claiming to be medical men bring suits against physicians or against medical societies for alleged insults to their professional dignity. This is a branch of the subject which is but little understood outside of the medical profession, and no physician who attends strictly to the business of his profession and does not meddle in the

³ Elwell *Malpractice*, p. 198, etc.

⁴ *Gallaher v. Thompson*, Wright (O.) 466; *Grindle v. Rush*, 7 Ohio (2d pt.) 124; *Seare v. Prentice*, 8 East (K. B.) 348; *McCandless v. McWha*, 22 Pa. St. 261; *Fleet v. Hollenkemp*, 13 B. Mon. (Ky.) 219, 56 Am. Dec. 563.

business or notions of those around him, needs any special instruction or advice in regard to it.

2. "*Civil Malpractice*," in which patients bring suits for damages which they have or think they have sustained through want of skill or from negligence on the part of their attending physician. The rights, duties and liabilities of a physician in such cases will first engage our attention, for the subject is liable at any time to have a practical importance for even the youngest physician, which will have to be felt to be appreciated.

3. "*Criminal Malpractice*," in which the state initiates the proceedings under the provisions of the criminal law.

§ 87. Degree of skill required.—While a physician or surgeon is supposed to bring to the performance of his duties ordinary skill and care and to exercise his best judgment in cases of doubt, he is not to be regarded as in any sense an insurer. And while he is not accountable for a want of the highest skill, or for an erroneous, though honest, conclusion according to his best lights, in determining what *is* ordinary skill and care, regard must be had to the advanced state of the profession and to what a man might or ought to know by reference to the literature within the reach of men of his profession, and by due diligence in availing himself of the experience of his profession. Another quite important element in determining what is ordinary skill and care, and whether they are exercised in any given case, is location. In the country or in sparsely settled districts practitioners must necessarily be lacking in that experience which the dwellers in large cities possess; hence, they are judged by a different standard and less is expected of them. The theoretical knowledge may be the same in both classes of practitioners, but the opportunities for daily observation and practice enables the one to far outstrip the other. But it is also true that a physician is required to exercise that degree of knowledge and care which physicians practicing in similar localities ordinarily possess, and not merely the knowledge possessed by physicians practicing in his own locality.⁵

⁵ Whitsell v. Hill, 101 Ia. 629, 70 N. W. 214, 37 L. R. A. 830n.

The law recognizes that in the practice of medicine there are many causes and influences over which the practitioner has but little or no control. They are such as want of vital force, habit of life, hereditary diatheses, climate, mental condition, surroundings, and many other hidden agencies which no human foresight could guard against, before they have brought about a different result than that confidently hoped for. Again the words ordinary care and skill will have different meanings when applied to different diseases, as we expect ordinary skill to mean more in the painting of a portrait than of a fence post. The general rule being that where one is employed to do an act depending upon the skill of the operator alone, the law implies from the employment an engagement to bring to the work the requisite skill to accomplish it. But if the act to be done depends upon the skill of the operator and of other causes over which he has no control the law only implies an engagement to employ the usual skill as a means of accomplishing the end, not that the end shall be attained; a physician engages to use the common skill of his profession in treating the patient, not to cure, and is only liable if he fails to treat the patient skilfully.⁶

An action against a physician or surgeon for a *failure to cure* can only be sustained by positive proof of an *express* promise.⁷

An empiric, although it is a penal offense for him to practice medicine, may be liable to a civil action for malpractice; and when he is sued as a physician proof that he held himself out as a "cancer doctor" and as having skill and experience in the treatment and cure of cancer, substantially supports the allegation. And proof that he accepted the employment will sustain an averment that he was employed at his special instance and request.⁸

In all these cases the burden of proof to show want of skill is on the plaintiff, and while the skill or want of skill of the physician or surgeon is put in issue his reputation in that respect is not material, and evidence to establish it is incompetent.⁹

⁶ Gallaher v. Thompson, Wright (O.) 466; Bliss v. Long, Same 351.

⁷ Grindle v. Rush, 7 Ohio 462.

⁸ Musser's Ex'r v. Chase, 29 O. S. 577.

⁹ Holtzman v. Hoy, 118 Ill. 534, 8 N. E. 832, 59 Am. Rep. 390n.

In Germany it has been held that where a patient wounded in the chest by a knife was treated without antiseptic precautions, and died from septic poisoning, the practitioner was guilty of culpable homicide, on the ground, among others, that he should have been so far abreast with modern science as to avail himself of the recognized rules of treatment, and to know that the procedure adopted by him might lead to the death of his patient. And it will readily occur to any one that, especially in hospital practice, such neglect would be culpable especially in cases where the death resulted from blood poisoning instead of the wound. In a case decided in New York city it was held that physicians who send their patients to the hospitals for infectious diseases are responsible in damages to the patient if they err *even in good faith* in their diagnosis.¹⁰

Formerly, in England, a physician was only liable to the extent to which one is liable who renders a gratuitous service, *i. e.*, for gross negligence; while a surgeon or apothecary was subject to the usual rule of liability. This for the reason that the services of the physician were rendered gratuitously, for, at common law, prior to the time of Queen Victoria, a physician could not maintain an action for his fees except upon an express contract, but a surgeon was entitled to recover compensation; hence, the reason for holding the latter to a stricter accountability. But in speaking of *gross* negligence, for which, under the foregoing circumstances, it is said the physician is liable, it must be borne in mind that it does not mean more than what would be called *ordinary* negligence in another person because of the skill supposed to be possessed by a physician.

The old Roman law was similar to what is the rule in America, viz., that if one undertakes to do a thing, he must be held to ordinary skill and care whether he is paid for it or not. A physician is not liable for arbitrarily refusing to respond to a call though he is the only physician available.¹¹

A physician by his contract undertakes that he will use ordinary care and diligence in the treatment of the case com-

¹⁰ Brown v. Purdy, 8 N. Y. St. 143.

¹¹ Hurley v. Eddingfield, 156 Ind. 416, 59 N. E. 1058, 83 Am. St. 198.

mitted to him, and he is not bound to any more unless by virtue of a special contract.¹² In all cases of doubt he must use his best judgment as to the best mode of treatment, and is not ordinarily held responsible for errors of judgment or mistakes in cases of doubt and uncertainty.¹³ And yet in one case the court seemed to hold that, because the surgeon erred in judgment in not cutting off a limb nearer the body, he was liable. The result was that judgment was rendered against him, not because he failed to remove the whole limb, but because he failed, as it was thought, to remove it a few inches higher up. And to this it might be added that it was conceded that he was a good surgeon, and performed the operation complained of skilfully, except that there was an error of judgment in the particular mentioned.¹⁴ This is, however, an exceptional case, and can only be accounted for on the hypothesis that all of the facts in the case showed that the error in judgment was so gross as to be inconsistent with the use of that degree of skill which it is the duty of every surgeon to bring to the treatment of a case.¹⁵ In the application of remedies and anaesthetics a physician or surgeon is only required to anticipate the natural and probable consequences thereof; as, for instance, if death results from the administration of an anaesthetic to a patient of a peculiar temperament, if such peculiarity was not apparent or was unknown to him he would not be liable.¹⁶ And in another case the physician was not held liable criminally where lobelia was administered to excess so as to cause death, as it appeared that it was administered in expectation of a cure.¹⁷

One who thrusts himself into a case without right or by request is held to a much stricter responsibility than one regularly employed in a case. Thus, when medicine was administered to a slave without the owner's consent, the practitioner was held

¹² Leighton v. Sargent, 27 N. H. 460, 59 Am. Dec. 388.

¹³ Patten v. Wiggin, 51 Me. 594, 81 Am. Dec. 593.

¹⁴ Howard v. Grover, 15 Shep. (28 Me.) 97, 48 Am. Dec. 478n.

¹⁵ West v. Martin, 31 Mo. 375, 80 Am. Dec. 107.

¹⁶ Bogle v. Winslow, 5 Phila. (Penn.) 136.

¹⁷ Commonwealth v. Thompson, 6 Mass. 134.

responsible for *all* the evil consequences which resulted.¹⁸ Where a surgeon setting a dislocated limb did not use a sling after the operation, and the medical witnesses differed as to whether or not a sling was necessary in such a case, the jury were held to be the judges, after weighing all the testimony, to determine whether or not it was negligence to omit the sling. So, also, if it is necessary in order that the best results may be attained that certain things should be done and in a certain way, it is necessary for the surgeon to give proper and plain directions in regard thereto; or if there is a tendency, in case of a dislocation, for the limb to become stiff, or if there is great pain, which may make the patient nervous and restless, such danger should be disclosed, so as to be guarded against, and failure to do so is culpable negligence. Although a surgeon has a right to give up the care of a dislocated limb at any time, especially if the patient assents, yet if he insists upon that assent as a protection to him in a suit for malpractice, the plaintiff may show, if he can, that his consent was obtained by representations that were false, and, if shown to be false, the consent is no protection to the surgeon against liability for damages that had occurred prior to the consent.¹⁹ A physician or surgeon may not only be liable for his negligence, but he may also be liable for his indolence. If he leaves his patients in the hands of unskilful persons so that his surgical cases are unskillfully dressed, he is liable to respond in damages for their conduct. He must attend to such matters himself or see that it is done properly, and should visit his patient as often as necessary, upon which point he is the judge of the necessity. So, he must devote enough time to his profession to enable him to discharge its duties. He must not undertake to do too much, but what he does undertake to do he is bound to attend to and do it skilfully. Neither can he voluntarily abandon or neglect a patient without being responsible for the consequences.²⁰

In England the law is, "if one, whether a medical man or

¹⁸ *Hord v. Grimes*, 13 B. Mon. (Ky.) 188.

¹⁹ *Carpenter v. Blake*, 60 Barb. (N. Y.) 488.

²⁰ *Beck v. German Klinck*, 78 Ia. 696, 43 N. W. 617, 7 L. R. A. 566; *Lawson v. Conaway*, 37 W. Va. 159, 16 S. E. 564.

not, professes to deal with the life or health of another, he is bound to use competent skill and sufficient attention; and, if he cause the death of the other through a gross want of either of these, he will be guilty of manslaughter."

And in this country the same doctrine has been held. Thus, upon the trial, under an indictment for manslaughter, of an irregular practitioner for causing the death of a patient by the application of coal oil with her consent, by covering her with flannels saturated with the oil for two or three days, it was contended that to constitute manslaughter the killing must have been the consequence of some unlawful act; that there was no law prohibiting any man from prescribing for a sick man with his consent, if he honestly intends to cure him by his prescription; that a patient has a right to employ whom he pleases to treat him, and acceptance of the employment by one who honestly believes he is able, and honestly intends to cure, is not a felonious act, however ignorant of medicine he may be in fact. But the court said: "The defendant publicly practiced as a physician, and being called to attend a sick woman, caused her with her consent to be kept in flannels saturated with coal oil for three days, more or less, by reason of which she died. He had made similar applications with favorable results in other cases, but in one of them the effect had been to blister and burn the flesh as in the present case. His duty was not enhanced by any express or implied contract, but he was bound at his peril to do no grossly reckless act, when he intermeddled with the person of another in the absence of any emergency or other exceptional circumstances. The claim is made for him that to constitute manslaughter the killing must have been the consequence of some unlawful act. If this means that the killing must be the consequence of an act which is unlawful for independent reasons, apart from its likelihood to kill, it is wrong. Such may once have been the law, but for a long time it has been just as fully and latterly, we may add, much more willingly recognized that a man may commit murder or manslaughter by doing otherwise lawful acts recklessly, just as he may, by doing acts unlawful for independent reasons, from which death accidentally ensues. But recklessness in the moral sense means a certain

state of consciousness with reference to the consequences of overt acts. In dealing with a man who has no special training, the question whether his act would be reckless in a man of ordinary prudence is equivalent to an inquiry into the degree of danger attaching to the act by common experience, under the circumstances of the particular case. It is undoubtedly true as a general proposition that a man's liability for his acts is determined by their tendency under all the circumstances known to him, and not by their tendency under all the circumstances actually affecting the result, whether known or unknown; but he can not escape on the ground that he has had less than a common experience. Common experience is necessary to a man of ordinary prudence, and a man assuming to act as the defendant did must have it at his peril. Here he knew he was using coal oil. More than that, he saw from day to day how it worked. It was applied as the result of foolhardy presumption or gross negligence. When he applied the coal oil to the person of the deceased in a reckless way or in other words seriously and unreasonably endangering life according to common experience he did an act which his patient could not justify by her consent, and which therefore was an assault notwithstanding that consent, and he is therefore guilty of manslaughter."²¹

A physician is always allowed discretionary powers in regard to the modes of treatment of a patient under his care, and may alter them according to his views of the necessities of the case; and unless such change of treatment involves a risk of life, or consequences of which he is unwilling to assume the responsibility, he is not under obligation to give notice or obtain permission before making it.

Where a patient is away from home, friends and relatives, and in some degree in his physician's custody and under his exclusive supervision as well as care, he is authorized to perform operations, or change his treatment, or enforce discipline essential to its fulfilment, without first consulting friends or guardians at a distance, as such delays might be dangerous to the

²¹ Commonwealth v. Pierce, 138 Mass. 165, 52 Am. Rep. 264.

health and possibly the life of the patient; and of such things he alone is the proper, as he alone can be the best judge.

§ 88. Uncertainty of medicine.—Among the many difficulties attending the practice of medicine, and one which if better understood outside of that profession, would tend to diminish the number of malpractice suits, is the uncertainty of medicine. In the law, while one may find that many legal propositions, having been passed upon by the highest tribunals, are settled and fixed, never thereafter to be questioned, in medicine there is no tribunal to settle vexed questions and if there was it could only settle it for the particular case under investigation. Much of this uncertainty in medicine arises from the fact that the peculiar field of investigation of that science is animal life and its management, which is not expected to be understood. As one of the ablest among medical writers has said:²² “Animal life is not only the most complicated department of nature, but the most vague; for beside being more or less subject to chemical and mechanical agencies, it possesses such a number of attributes peculiar to itself, and those of such a various and fluctuating nature, as to put their influence and combination beyond the reach of all calculation, and so as to present the most formidable and discouraging obstacles to those who may propose, *a priori*, to predict or control its operation, whether in health or disease. The simplicity of the laws of inanimate nature admits of the most certain inferences, whereas the indefinite action and reaction of the numerous faculties peculiar to life, add greatly to the difficulty and uncertainty of experiment and observation. But this is not all; for the constitution being endowed with various degrees of these faculties, an endless variety is found to occur among individuals, giving rise to that uncertainty in the result, that has brought upon it the character of a conjectural art.”

As some examples of the endless variety of these peculiarities we find an almost limitless number and variety of predisposing causes to disease. They are not actual disease, but when an acci-

²² Sir Gilbert Blaine, Elements of Medical Logic, London (1825), pp. 31, 237.

dent happens to the individual it seems to be the one thing needed to fully develop the disease. Most frequently their rise is attributed to the wound or injury, or to the treatment, when in fact it is but the bursting into flame of a long dormant spark. Then the patient lives within a vast range of debilitating influences, such as improper nourishment, impure air, and water, great mental or physical exertion, or leading a sedentary life suffers from lack of exercise or is subject to atmospheric changes; intemperance in food or drink, previous debilitating diseases, etc. So, too, there may be a long continued state of excitement or activity running up the circulation abnormally, although not amounting to actual disease; and while one may be so sound in health as to ward off malaria and its attendant diseases, a brain already overworked may yield more readily to inflammation and aggravate the danger from inflammation. Propensity to disease is often caused by previous disease, although it may be hidden; this is especially noted in the case of some forms of inflammatory and nervous diseases. Then there is the constitutional predisposition to disease, which causes a person who has once suffered with certain diseases to have a recurrence thereof with any exciting cause present. Convulsive diseases are liable to recur on the happening of what would not affect persons not subject to such diseases. It is a well-known fact that there may be actual disease existing in a body, even when undiscoverable by the closest observation and a blow or concussion will arouse it to activity and bring it to light. So that but for this hidden disease the patient would have progressed all right, and the physician would have had no trouble. As if these accidental or predisposing causes were not sufficient obstacles in the way of the medical attendant, there must be added those which are born in the individual and those which arise from the circumstances of age and growth. Although the hereditary tendency to disease is well established by experience and well known to all physicians and surgeons yet it is equally as well known that there is no known rule by which its development can be predicted. That the tendency to certain diseases such as consumption, etc., may be transmitted from parent to child from generation to generation is well known; yet the appearance of consumption is very uncertain, as

it may pass over a whole generation, and when it appears it may attack one child and not another in the same family. This influence is also known to be greatly modified by sex; the females being attacked with one form of disease and the males by another. The general rule is that notwithstanding this tendency these diseases are not developed in infancy, being usually developed by growth and the accidents of life. The parent develops the disease in middle life; the son may, by his course of life, bring it on in early life, or be free from it until old age or altogether. Cases have been known where such diseases were developed in the children before they made their appearance in the parents, so that the children, one after another, have died of consumption before they reached their twentieth year and the parents were both apparently healthy until the mother, after the age of fifty, developed the same disease.

The method of procedure to be adopted and the success to attend it is again dependent largely upon the temperament of the patient, and all of these difficulties appear and act differently at different ages even in the same individual. Even such a cursory examination and statement of the obstacles in the way of the success of the medical practitioner, must convince any one that experience is not the aid in the medical profession that it is in all others. If the circumstances of two cases were the same then experience in the one case would avail in the treatment of the other; but although the disease or the accident may be the same, the internal arrangements and derangements of the patient are not the same, nor are his surroundings the same: his ancestors, his temperament, his age are different. The most that can be claimed for the two cases is that they are similar and then the physician proceeds upon analogy and not experience.

It is his duty then to proceed with the greatest circumspection and caution, advancing step by step as he gains light, and he should always be prepared to defend his profession from attack by showing the uncertainties surrounding the practice and the obstacles in the way of success.

It is the knowledge that these uncertainties and obstacles exist that has been the foundation of the rule that a physician or surgeon is only bound to exercise ordinary care and skill in the par-

ticular case; and that ordinarily he is not liable for errors of judgment but only liable when he assumed the character and undertook to act as a physician, without the education, knowledge and skill which entitled him to act in that capacity.²³

In order to maintain an action for malpractice the plaintiff must show that the physician failed to exercise the ordinary care and skill of his profession. Errors of judgment and want of perfect information do not alone establish the liability of the physician.

§ 89. Duty of surgeon.—This ordinary care and skill, however, implies the application to the case in hand of that degree of knowledge which is within the reach of the physician and he will be liable in damages not only for want of skill but for want of application of such skill as he does possess. In the surgeon it is as high a test of his capacity to know when not to use his surgical instruments as to know how to use them when necessity requires. The great surgical operations are seldom performed even by those standing in the front rank of the profession; but every day trivial accidents occur in the relief of which surgeons are constantly engaged.

It is in properly attending to these minor accidents that the necessity for the larger ones is avoided. Of course if the necessity arises no surgeon should hesitate to amputate a limb, but how much better it is, by reason of the knowledge of anatomy, physiology and pathology, which all surgeons should possess, to be able to save the limb and the life. Between the limb and the life always sacrifice the limb, but to save both is the duty of a good surgeon. To judge the future by the past and in the light of sound reason and experience, it is apparent that the greater the progress made in surgery the fewer will be what are now known as the common operations. The knowledge required to determine whether a severe operation is necessary or not, is of a far higher order than that which will qualify the surgeon to perform it when determined upon. In order to justify an amputation, whether of a part or of the whole of a limb, the question

²³ Leighton v. Sargent, 7 Foster (27 N. H.) 460.

of recovery by other means must be placed beyond all reasonable doubt.

Every other resource compatible with the means of the patient should be exhausted; even then the surgeon should not place too much reliance upon his own judgment; much may be learned by consultation with one or more surgeons of prominence in the neighborhood, and the necessity for this final step must be clearly established; and in determining this question learn to distinguish between the warrant of a necessity emanating from physical and that from moral causes.

Amputations are requisite to preserve life from the consequences both of incurable disease and injury. Under what are called diseases rendering amputation necessary and which should always be demonstrated to be incurable without amputation may be classed any form of disease of the extremities, which being difficult or impossible to cure, draws so largely upon the circulation, and hence on the nervous system as to endanger the present or future health of the person thus affected. In cases of injury from violence, it is proper to resort to amputation in severe compound fractures, in greatly comminuted fractures, in which the limb has been crushed under the application of a heavy weight, and in extreme cases of irreducible dislocations, and lastly, in distortions, comprising operations of expediency.

From the treatment of fractures and dislocations have arisen many law suits to vex the minds and deplete the pockets of the physician and surgeon.

§ 90. Fractures.—Fractures but rarely involve the necessity of amputation yet their management is often very difficult and the skill required is of the highest. The manipulative agency of operative surgery is required in cases of fractures and if not properly exercised the result is deformity for life, often accompanied with great suffering. In the treatment of simple fractures much time, watchfulness and patient labor are required to assist nature in working a cure; and to this treatment must be brought not only the theoretical but the practical knowledge of anatomy.

The most difficult to treat are compound fractures and oblique simple fractures. Although the medical distinction between a

compound and a simple fracture is well understood, to others it is always a mystery that any trouble or difficulty should result from a simple fracture. And hence it is that when the medical witness says this was a case of simple fracture, without saying that by that he means that the skin was not broken, he is building up the prejudices of a jury against the defendant physician. Another error which it is the duty of the medical profession to dispel, if for nothing else than from an instinct of self-preservation, is that if the patient is healthy at the time of the accident a perfect cure should be the result, if the treatment instituted is proper.

On the contrary, according to the latest and best authorities, in almost all oblique fractures there is necessarily a shortening of the limb under the best treatment. Professor Hamilton has proven, so far as "Tables" can prove, that in fractures of the tibia and fibula both compound and simple, perfect results are in the proportion of only one to about three of the cases treated; and in fractures of the femur and clavicle complete cure results in about one case in five; in fractures of the patella only one perfect cure in six. Surgical authors have taught the doctrine and students have gone forth from our medical colleges firm in the belief that the perfect union of broken bones is the rule and that the exceptions imply generally unskilful treatment; on the contrary, reason and observation teach that under the best circumstances and treatment, the steady contraction of the muscles will bring about a shortening of the limb, and that a perfect union of the broken bones is rather the exception than the rule. The surgeon should be certain in diagnosis of the injury; carefully adjust and keep in place the injured part; apply the most approved dressings and apparatus and by all known means, control spasmotic action and pain. Thus he will not only do the best for his patient, but for himself in protecting his reputation and his purse.

In cases of dislocations, be sure not to diagnose them as fractures and thus apply the wrong treatment. There is no class of injuries to the human frame that will suffer more by delay than dislocations. It is then of the greatest importance to act promptly and correctly at the time of the injury. Every hour

lost, increases, as a general thing, the difficulties of reduction, and will greatly endanger the patient's recovery, and may make the surgeon liable in damages, if the delay is caused by his advice or conduct. It is hardly necessary to say that for the more delicate operations connected with other organs of the body such as the eye and ear still greater care and caution are required.

§ 91. Schools of medicine.—The law recognizes no school of medicine or surgery, but a physician or surgeon is expected and required to practice according to the system he professes and avows. So that in a suit for malpractice the defendant may prove that his treatment was according to the botanic system of practice which he practiced and was known to follow.²⁴ But at the same time the courts will not shield one in practices which no sane man would adopt, or allow him to shield himself with the formula that he did the best he knew, when what he did shows the grossest ignorance of medicine and surgery. And it has been rightly held that it is not proper to say to the jury that it is a sufficient defense that defendant has treated the patient according to the ordinary skill of the system he professes unless that system involves the duty of treating disease with reasonable skill, in the light of the then existing state of medical science.

The particular case in which this was held was a suit against a clairvoyant physician for malpractice. The court was asked to charge the jury that "if at the time defendant was called to treat plaintiff, both parties understood that he would treat him according to the approved practice of clairvoyant physicians and that he did so treat him, with the ordinary skill and knowledge of the clairvoyant system, plaintiff could not recover." This the court refused to do and the case being taken to the supreme court that court said: "Instead of the words 'with the ordinary skill and knowledge of the clairvoyant system' should have been used the words 'with the ordinary skill and knowledge of physicians in good standing, practicing in that vicinity.' One who holds himself out as a healer of diseases must, no matter to what particular school or system he belongs, be held to the duty of

²⁴ Force v. Gregory, 63 Conn. 167; Bowman v. Wood, 38 Am. St. 371, 1 Ia. 441; Corsir v. Maretzek, 4 E. D. Smith (N. Y.) 1.

ordinary skill, in the light of the present state of medical science.”²⁵

§ 92. Duty of patient.—While the law holds a physician or surgeon to the strictest accountability, at the same time it gives him certain rights and protects him in them. Among these is the right to require of the patient implicit obedience to his orders; and if the directions given by him are not followed or if the patient refuses to conform to his prescriptions, though they appear to be objectionable, no action will ordinarily lie.²⁶ Of course no damages can be recovered unless the patient shows that injury has been sustained.²⁷

The information given by a surgeon to his patient concerning the nature of his malady is a circumstance that should be considered, in determining whether the patient, in disobeying the instructions of the surgeon, was guilty of contributory negligence or not.²⁸

The fact that while a suit for damages against a physician and surgeon for carelessly, negligently and improperly treating an arm, is pending, the physician obtained a judgment by default for his fees in that case cannot prevent the recovery of damages.²⁹

§ 93. Liability of physicians and surgeons.—The degree of liability to which the physician or surgeon is held is not varied by reason of the fact that he is performing his services gratuitously. The law requires of him just as much skill and care and diligence and judgment in treating a penniless patient as it does when he treats a wealthy man.³⁰

The medical profession is branching out into specialties just as other professions. The law holds all medical specialists to a degree of liability commensurate with the peculiar opportunities

²⁵ Nelson v. Harrington, 72 Wis. 591, 40 N. W. 228, 1 L. R. A. 719n, 7 Am. St. 900.

²⁶ Leighton v. Sargent, 7 Foster (27 N. H.) 460, 59 Am. Dec. 388; McCandless v. McWha, 22 Pa. St. 261; Geiselman v. Scott, 25 Ohio St. 86.

²⁷ Craig v. Chambers, 17 Ohio St. 253.

²⁸ Sykes v. Bonner, 1 C. S. C. (O.) 464.

for possessing and using skill and care. The specialist is held to that degree of care, skill and knowledge ordinarily possessed by practitioners devoting special attention and study to the same branch. His skill is not measured by that possessed and displayed by the profession generally, but by those physicians who are specialists in his line.²⁹

. Therefore a physician or surgeon is liable to be sued for malpractice in treating a patient.

- (1). When he does not possess ordinary skill, science and information; or
- (2). When he does not use reasonable and ordinary care and diligence in applying his knowledge and exercising his skill; or
- (3). When he does not use a reasonable and ordinary degree of skill and knowledge in treating the patient; or,
- (4). When he does not exercise ordinary care and diligence in attending and treating the patient; or,
- (5). When he fails to give proper instruction to the patient as to the care of himself; or,
- (6). When he fails to use ordinary care and diligence in determining the frequency of his visits and the cessation of the same; or,
- (7.) When he fails to follow the established advanced modes of practice of his particular school and injury results to the patient.

And all this whether or not he is to receive compensation.

§ 94. Preparation for the defense of malpractice suits.—Suits for malpractice are by no means uncommon, and even the best and most skilful in the medical profession have not escaped from such annoyances. An examination of the cases, which could be cited, even from one State, might well have a tendency to deter any one from entering upon the practice of this profession. The bad and unskilful members of the profession are not generally the ones who are pursued in this way. It devolves on medical men, then, to be diligent in their profession, and careful in the performance of their duties. They should be

²⁹ Feeny v. Spalding, 89 Mo. 111; McMurdoock v. Kimberlin, 23 Mo. App. 523.

honest with their patients; advise them of the seriousness of their cases and thus secure their co-operation in the treatment. Remember that much depends on the nurses, and that they need constant instruction in their duties. Do not claim to be able to perform miracles, but only to give your best skill to a case. Medical men should not be too hasty, as expert witnesses, to denounce methods followed by other physicians and surgeons, for the witness may not hold a patent on the healing art, and it will often be surprising to find that good results have followed a great variety of methods of treatment. Where a medical man knows he has performed his whole duty according to the best of his skill and ability, and according to the most approved teaching of his system, as he ought to be able to say he has done in *every* case, he need not be afraid of a suit for malpractice. If such a suit does come, and come it may, even under such circumstances, he should not either settle it or make light of it. He owes it to himself and his profession to vindicate himself before the world. Let him be sure to employ the very best lawyers, and have for his witnesses *honest, learned* physicians, for upon them will rest his ease.

As was said by the judge in charging a jury in an action for damages for unskillfully setting a leg: "The question turns solely on the credit due to the physicians who have testified as to the practice. If they are skilful themselves and worthy of credit, your verdict should be for the defendant, for they all sustain the practice; if unworthy of credit or unskilful, and the other proof shows the practice careless and unskilful, you should give the plaintiff such damages as will compensate him for the injury received."³⁰

He should put his attorney in full possession of *all* the facts in his case, being careful not to conceal from him such as may, in his judgment, be prejudicial to him. Submit to him his medical authorities sustaining his treatment, and all other medical works from which he can gain any information. He should afford him an opportunity to converse freely with the witnesses, so that he may know what their testimony will be. In other

³⁰ Gallaher v. Thompson, Wright. (O.) 467.

words, he should give to this lawsuit the best of his skill and ability, and he may be sure his lawyer will do the same. But with all this, juries have been found so blinded with prejudice or steeped in ignorance, as under the circumstances I have named, to give the plaintiff damages. Then having the case in proper condition, it can be laid before the judge, who can and ought, and in most cases will, view it with impartiality, and give the defendant his rights under the law. But whatever judges or juries do, he must do his whole duty, and do not fear for the ultimate result.

In Indiana a physician was sued for malpractice, the injury being burns caused by use of the X-ray. It was shown that the X-ray was used with the patient's consent. The jury brought in a verdict in favor of the physician upon the facts, and the court was of the opinion, and so held, that the use of X-rays did not show any departure from recognized medical practice, and held the physician only to the requirement that he should exercise ordinary skill and care and be liable as in any other case for negligence.³¹

§ 95. Right to physical examination of plaintiff.—Another question which may arise in a malpractice suit is whether or not the defendant has the right to compel the plaintiff to submit himself to a physical examination, either by defendant's witnesses or well-known and competent physicians named by the court. This is often a very important question, as it may be very necessary to enable the defendant to prepare his defense. It must be understood that the plaintiff has a right, and invariably uses the privilege, of showing his wounds, injuries and scars to the jury, and does so under such circumstances as would render an examination by defendant or his witnesses at that time well-nigh impossible, even if the court would delay the case in order to give them time to do so. Whether the defendant has this right has been the subject of many decisions and much controversy.

Under the common law no such right existed, and in this country it has become, in some States, a matter of statutory

³¹ Shelley v. Spohn, LaGrange Co. Cir. Ct. (Ind.).

enactment, and in the absence of any statute upon the subject the weight of authority sustains the propositions that trial courts have the power to order the surgical examination by experts of the person of a plaintiff who is seeking a recovery for physical injuries; that the defendant has no absolute right to have an order made to that end and executed, but that the motion therefor is addressed to the sound discretion of the court; that the exercise of that discretion will be reviewed on appeal and corrected in case of abuse; that the examination should be ordered and had under the direction and control of the court, whenever it fairly appears that the ends of justice require the disclosure or more certain ascertainment of facts which can only be brought to light or fully elucidated by such an examination, and where the examination may be made without danger to plaintiff's life or health and without the infliction of serious pain.³²

§ 96. Liability of a hospital.—Not infrequently the question arises as to the liability of a hospital for damages for malpractice. Usually a hospital is a corporation, and the general rule of law is that a corporation is liable for the negligence of its servants. The courts have, however, made a distinction in this respect between public charitable hospitals and other corporations, and hold that such hospitals are liable to their patients for the negligence and unskilfulness of its agents no further than to be held responsible if negligent in selecting competent servants.³³

The reason for this rule is thus stated in the Massachusetts case referred to: "This corporation has no capital stock, no provision for making dividends or profits, and whatever it may receive from any source it holds in trust to be devoted to the object of sustaining the hospital and increasing its benefit to the public by extending or improving its accommodations and diminishing its expenses. Its funds are derived mainly from

³² Ala., &c., Railway v. Hill, 24 Am. St. 764, 90 Ala. 71, 9 L. R. A. 442; Graves v. Battle Creek, 95 Mich. 266, 35 Am. St. 561.

³³ McDonald v. Hospital, 120 Mass. 432, 21 Am. Rep. 529; Pepke v. Grace Hospital, 130 Mich. 493, 57 L. R. A. 632.

public and private charity; its affairs are conducted for a great public purpose, that of administering to the comfort of the sick, without any expectation on the part of those immediately interested in the corporation, of receiving any compensation which will inure to their own benefit, and without any right to receive such compensation.

"It has no funds which can be charged with any judgment which might be recovered, except those which are held subject to the trust of maintaining the hospital."

Practically alone in the decisions stands the case in Rhode Island where the court held that a hospital was liable in damages the same as any other corporation for the negligence of its servants, and that such liability could only be lessened or entirely removed by the legislature, and not by the courts.³⁴

Some legislation in this direction has been enacted in Rhode Island since this decision, but the decision stands as the law of that State except as modified by this legislation.

The doctrine of the Massachusetts case may be said to be the law followed by the other States and is the proper legal view to take of this question, the reasoning of the court being so sound as to seem irrefutable.

§ 97. Measure of damages.—The measure of damages in a malpractice case is determined when an answer is given to this question. What amount in money will give compensation to the party injured for the actual loss sustained?

In addition, if the act was criminal, oppressive or grossly negligent, the jury may award exemplary damages by way of punishment. Within these limits the damages may be as small or as large as the jury may deem adequate, limited always by the amount claimed. They are given for present and prospective damage, and may cover: (1) the actual pecuniary loss sustained; (2) the indirect pecuniary loss; (3) mental suffering; (4) loss of time; (5) diminution of means of earning a living; (6) deprivation of the services of the wage earner; (7) loss of the services of wife or child; (8) punishment in case of crim-

³⁴ Galvin v. Hospital, 12 R. I. 411, 34 Am. Rep. 675.

inal, oppressive or gross negligence³⁵; (9) temporary or permanent disability; (10) physical pain and suffering.

On the other hand, the plaintiff is liable to lose out entirely unless he proves that the defendant was negligent and that such negligence was the cause of the injury complained of. This cannot be established by merely proving that plaintiff has been injured, nor by presumption; the evidence must establish the negligence by a preponderance of the evidence. And as in all other cases of negligence, if the plaintiff has been guilty of contributory negligence in regard to the injury, he cannot recover. In some of the States the jury is allowed to weigh the comparative degree of negligence of plaintiff and defendant and award a verdict to the least negligent party, but in most States any contributory negligence of the plaintiff in regard to the injury, will defeat his right to recover any sum whatever.³⁶

§ 98. Advance in surgery.—An investigation into the history of surgery will occasion great surprise at the progress made within a comparatively few years. Glancing back not over 200 years it will be found that the practice of surgery was largely abandoned to a class of ignorant barbers and bone setters;^{36a} the delusion existed as strongly “as holy writ,” and, indeed, claimed to be founded upon it,³⁷ that some men were natural surgeons, or commonly called natural bone setters. In cases of fractures and dislocations a journey of fifty miles would often be taken to obtain the assistance of these bone setters. This delusion is not entirely destroyed, and occasionally you will find one of these gifted men and they will always have patients.

The famous English “bone setter,” Mr. Hutton, who died a few years ago, had no learning. He neither “walked the hospitals” nor ever learned the names of all the crevices in the human skeleton. If he had all the bones of the human body

³⁵ Cochran v. Miller, 13 Ia. 128.

³⁶ Drown v. N. O. Traction Co., 76 Ohio St. 234, 81 N. E. 326, 118 Am. St. 844.

^{36a} 15 Ency. Amer. s. n. “Surgery.”

³⁷ Eccl., Ch. 36, v. 12.

thrown down before him he would have had considerable trouble to arrange them in order. Yet trained men sent patients with dislocations to him.

Here is an account of an operation by one of these natural bone setters, which not only illustrates their methods, but the simple and abiding faith of their patrons:

"A bone setter, named Richard, famous in the neighborhood of Napoleon Vendee, but still more famous by reason of having been fined five francs, which made him a martyr, and increased his practice five fold, was consulted on June 4, 1853, by a farmer of the commune of St. Denis, who complained, after a heavy fall, of violent pain in the neck. The bone setter, telling him he would put his neck right, seized his head in both hands, and by a rapid motion from left to right, turned the head over the shoulder three times. At the third time a crack was heard, and the bone setter exultantly exclaimed, 'It is done; the neck is reduced.' But at this very instant the patient was seized with paralysis of the arms and legs; his speech became very difficult; he complained of violent pain, and died the next day, firmly convinced of the skill of the operation, asserting to the last that his neck was properly set. Examination of the body showed an effusion of blood at the level of the second and third vertebrae, the ligaments between which were stretched and torn; there was another effusion between the cerebellum and the base of the skull, evidently arising from lesion of the cord and its membranes."³⁸

The Sweet family of New York traveled all over the United States setting bones, although not possessed of any learning upon the subject. They claimed to be a family of natural bone setters, and were very successful in their practice. For three generations they have practiced this natural gift without medical education or training and have been universally successful. This gift cannot be explained, but that it exists is proven by this family. The *London Sketch* of November 11, 1908, contains a long article on the wonderful cures effected in cases of

³⁸ 2 Wh. & St. (part 2), § 811.

injuries to the spine, knee cap, ankle and other bones of the body by Mr. H. A. Barker, of London, the "Bone Setter."

Within the last 200 years the treatment of the simplest incised wounds was cruel in the extreme. Instead of bringing the edges of the wound together, for the purpose of union by the first intention—as is the practice at the present day—the wound was opened and filled with dressings, acid balsams, tents, ashes, sugars, leaden tubes, etc., to force the wound into a painful suppuration, which was considered necessary to a cure.

When a part was nearly or partially severed, instead of being united, it was cut away, even to every flap of skin; every open wound was plugged up lest it should heal. Tents, setons, leaden canulas and strong injections were among the chief implements of surgery. The teaching and practice were that the lips of a wound must not be put together. If the opening was not large and free, it was the rule to dilate it, but never with the knife; it was torn open with a sort of forceps; and thus the most simple wounds were forced into sloughing ulcers. Long tents were thrust into the wounds of the neck and face until they were extended enormously. Compound fractures were treated by thrusting the dressings between the ends of the bones. There was a time when all wounds were treated by the process of sucking, which consisted in immediately applying the mouth to the wound and continuing to suck and spit out the blood until it stopped, when a wad of paper was chewed up and introduced into the wound. These were not the practices of charletans and quacks, but of those who were considered masters of their profession. There was something about the people of that day which led them to believe in that which, by something they could see, conquered them and their ailments. The tender soothing, saving and healing prescription was all unsuited to them. There is inherent in some men an obtuseness to anything but hard knocks. To illustrate that in the law the following is in point: An old time farmer, having a law suit on his hands, employed Judge S. to defend him. Judge S. was a very fine lawyer and able to cope with the best of lawyers. As the time for trial drew near the farmer, evidently uneasy, went to another lawyer to retain him to assist Judge S. This lawyer told him that he did not

need any other lawyer, and that Judge S. was fully competent to manage the case. But this did not satisfy him. He said to the lawyer: "That may all be so, but I insist on your going with me; I am afraid of S.; he has a *hand just like a woman's*." He couldn't imagine such a hand capable of giving the hard knocks which he associated with a law suit.

Although practice then might have sanctioned the operations I have described, a physician or surgeon to-day would find himself in a sorry plight if he should plead that he had treated a case according to those doctrines; he must keep up with his profession and practice in accordance with its most advanced and improved teachings.

An amputation which would have been justified twenty-five years ago would now be looked upon as clear evidence of ignorance and unskilfulness.

§ 99. Criminal malpractice.—A word in conclusion as to criminal malpractice. The following propositions have been laid down to govern in determining whether or not a man was criminally guilty of malpractice.

1. If the accused acted honestly and used his best skill to cure, and it does not appear that he thrust himself in the place of a competent person, it makes no difference whether he was at the time a regular physician or surgeon or not.
2. To constitute guilt, gross ignorance or negligence must be proved.
3. A defendant who, with competent knowledge, makes a mistake in a remedy, is not answerable; but it is otherwise when a violent remedy, shown to have occasioned death, is administered by a person grossly ignorant, but with average capacity, in which case malice is presumed, in the same way that it is presumed when a man in his right mind lets loose a mad bull in a thoroughfare, or casts down a large stone on a crowd.
4. Where competent medical aid can be had, the application of violent remedies, by an ignorant person, though with the best motives involves him in criminal responsibility.
5. Express malice, or an intent to commit a personal or

social wrong makes the practitioner criminally responsible in cases of injury.

And in addition thereto whatever acts or practices by physicians or surgeons or those claiming to be or acting as such, are made crimes by the statutes of any particular State.³⁹

6. A person's religious belief cannot be accepted as a justification for his committing an overt act made criminal by the law of the land.⁴⁰

³⁹ 2 Wh. & St. (part 2), § 1063.

⁴⁰ Reynolds v. United States, 98 U. S. 145.

CHAPTER XII

WOUNDS—BURNS AND SCALDS—SPONTANEOUS COMBUSTION— DEATH FROM HEAT, COLD, LIGHTNING, ELECTRICITY, STARVATION AND SUFFOCATION.

§ 100. Definition and classification of wounds.	§ 108. Classification of burns.
101. Post mortem in case of wounds.	109. Burns before and after death.
102. Distinction between ante and post mortem wounds.	110. Danger from burns—Death resulting from other causes—Post mortem.
103. Weapon used.	111. Spontaneous combustion.
104. Suicidal wounds.	112. Death from heat.
105. Blood stains, hairs, etc., as evidence in homicide cases.	113. Death from cold.
106. Cause of death from wounds.	114. Death from lightning.
107. Burns and scalds.	115. Death from electricity.
	116. Death by starvation.
	117. Death by suffocation.

§ 100. **Definition and classification of wounds.**—The surgical and legal definitions of a wound are different, although the term in its popular meaning can hardly be misunderstood. The surgical definition of the term is “a solution of continuity of the soft parts, occasioned by external violence.” According to this definition, there must be a rupture of the skin or mucous membrane, to constitute a wound, and therefore all internal injuries unaccompanied by external lesion would be excluded. The legal definition of a wound, on the other hand, includes any lesion of the body, whether external or internal, with or without a solution of continuity of the skin, produced suddenly by external or mechanical violence; and includes all injuries embraced in the surgical definition, and also every other kind of accident, such as bruises, contusions, fractures, dislocations, and the like.¹

¹ Bouvier’s Dictionary *s. n.* wound.

Where an accident insurance policy covered *inter alia* blood poison sustained by physicians or surgeons resulting from septic matter introduced into the system through “wounds” suffered in profes-

A usual and proper classification of wounds is founded upon their visible marks upon the skin, and is as follows: Incised, made by instruments that cut; punctured, made by instruments that stab; lacerated, made by instruments that tear asunder; contused, made by instruments that bruise, and gunshot wounds. A distinction is sometimes made between mortal and non-mortal wounds, or between wounds dangerous and not dangerous to life. This distinction is apt to be misleading, as no wound is considered dangerous to life, if it is not immediately dangerous; and no wound is mortal unless in an ordinary case the chances are that death will result from the actual effect of the wound. Yet unexpected complications and various extraneous causes give gravity to the simplest cases and, on the other hand, a favorable termination is granted to some injuries of apparently the most dangerous nature. These considerations should make the medical witness cautious in giving his opinion in those cases where the question of the seriousness of a wound is concerned; as, for instance, where it is necessary to determine this question as preliminary to admitting or refusing to admit a prisoner to bail. Dr. Bigelow, Professor of Surgery at Harvard College, reports the case of Phineas P. Gray, who, by a premature explosion of a blast, had an iron bar weighing thirteen and one-fourth pounds, three feet seven inches long and one and one-quarter inches in diameter, driven directly through his head and high into the air. And yet, beyond a slight convulsion just at the time, he seemed to experience no ill effects from the wound. In another case, a soldier having made an attack upon an officer, was set upon by other soldiers and, running away from them, ran upon the bayonet of the sentry on guard. The bayonet entered his body an inch to the left of the ensiform cartilage, passed through the abdomen and its point emerged on the left of and close to the spinal column, some inches lower down. He walked to the hospital, three-quarters of a mile away, and was discharged from there cured in a fortnight.

sional practice, it was held that "wounds," as used in the policy, meant an injury resulting in a rupture of the skin or mucous membrane. *Fidelity & Casualty Co. v. Thompson*, 154 Fed. 485, 487 (C. C. A.).

The varieties of and the degree of danger attending, wounds in general, depend very much upon the following circumstances: The extent of the injury; the kind of instrument with which it was inflicted; the violence which the fibres of the part have suffered, in addition to their division; the size and importance of the blood vessels and nerves which are injured; the nature of the wounded part, in respect to its general power of healing favorably or not; whether the operations of the system at large and life itself can be well supported or not, while the functions of the wounded part are disturbed, interrupted or suspended by the accident; the youth or old age of the patient; the goodness or badness of his constitution; and the opportunities which there may be of administering proper surgical aid, and assistance of every kind.²

§ 101. Post mortem in case of wounds.—But it very seldom happens that a physician is called upon to testify in regard to a wound until after the death of the victim, when the question is how far a given wound was the cause of death. It certainly cannot be necessary to say that in such cases theorizing is out of place and a thorough post mortem examination should be made. Every physician is not, and can not, be expected to be familiar with all the branches of science necessary to make a complete post mortem. Where it requires the use of the microscope or the making of a chemical analysis, those who can properly be called experts in such branches should be called. It sometimes happens that a post mortem has to be made at a time and place where it is impossible to procure their services. If such a duty is required, another physician should be called in, and after explanation is made to the authorities as to the difficulties under which the examiner labors, he should make as thorough and systematic an examination as his knowledge and best skill will enable him to make. He should carefully note the following points: The locality, the direction and the dimensions of the wound; whether there is a loss of substance or not; whether the wound was inflicted before or after death, with the

² 2 Wh. & St. (part 2), § 687.

grounds of his opinion; the probable cause of the wound and the position of the body at the time; the results of the injury (ecchymosis, swelling, hernial concussion, inflammation, suppuration, ulceration, gangrene); the condition of the clothes of the deceased, especially the portion (if any) corresponding to the place of injury; the comparison of the weapon with the wound; and he should inquire what medical assistance has been rendered, and by whom. Besides these general points in regard to which an examination should be made, a very carefully detailed account of the wound itself is required, not only to ascertain the nature of the weapon used, but also to learn how far it penetrated the body and what organs have been injured. Nor should the importance of a general and careful examination of *all* the organs of the body be forgotten, for although the immediate cause of the death may seem evident, it is advisable to be sure that there was no cause of death in any other part; although there may be no suspicion of poisoning, the stomach should be examined. As an illustration of this necessity for examining all the organs of the body, there may be cited the well-known case of the girl who died while her father was flogging her for stealing. On account of the marks of violence upon her body it was at first supposed that he had caused her death. On opening her stomach, it was found inflamed and containing a white powder which proved to be arsenic. Investigation proved that the girl, fearful of her father's anger when he detected her in the theft, took arsenic and died from the effects.

It may happen that, although no marks of violence can be found externally, or none which would satisfactorily account for the death, internal injuries may be discovered upon the post mortem which will render it certain that the death was violent. Indeed, some authorities say that, as a general rule, when death follows an injury, suddenly or speedily in consequence of internal hemorrhage or other effect of laceration of an internal organ, the signs of external injury are either slight or entirely wanting. Many instances sustaining this assertion might be given, but I will only cite a few as illustrative of all.

A woman was knocked down and run over by a sleigh in the streets of Boston. She lived ten days after the accident, and

there was no mark of any external injury. On the post mortem examination, the liver was found to be lacerated, the common bile duct was torn across and several fractures appeared in the right kidney.

Taylor, in his Medical Jurisprudence, tells of a girl who was struck in the abdomen with a stone, and after suffering great pain, died, although no external injury was found. On the post mortem it was ascertained that the ileum was ruptured and its contents escaping had brought on peritonitis.³

In another case a man was killed by being struck by a locomotive. The only visible signs of injury were a slight bruise over the right hip and a fracture of the right humerus. On post mortem it was found that five ribs were broken, lungs bruised and liver and right kidney crushed.

§ 102. Distinction between ante and post mortem wounds.—The distinction between wounds made before and those made after death is important to be noticed and depends upon the signs of vital reaction in the wound and its vicinity. If the signs of inflammation, or its products, are found; if the wound is swollen and discolored; if plastic lymph has been thrown out between its edges; if suppuration or gangrene or cicatrization has taken place, these are not only certain proofs that the wound was inflicted before death, but also that the death did not follow immediately upon the giving of the wound. But where none of these signs can be detected it is difficult to determine whether the wound was inflicted before or after death. In cases where death results rapidly from hemorrhage from a large artery or vein, it frequently occurs that no traces of suggillation or inflammation can be discovered, although the wound was inflicted before death. If death results from the wound, not immediately, but before the effusion of plastic lymph, its edges will be found swollen and everted and coagulated blood effused in the track of the wound and the adjoining cellular tissue. These characteristics will not be found where the wound causes immediate death on account of the rapid drain from the capillaries

³ 1 P. & P. of Med. Jur., p. 496.

in consequence of internal hemorrhage or the sudden stopping of the heart's action. In such cases there are not likely to be any signs of vital reaction or outward effusion of blood.

If, in a case of poisoning, immediately after death a stab in the heart should be given to avert suspicion, while an inspection of the external wound would not show when the wound was given, the absence of internal hemorrhage would.⁴ Experiments have been made upon amputated limbs, to ascertain the distinction between wounds inflicted before and after death. The only fact of any importance derived from such experiments is the negative one, that the coagulation of the blood is not a safe criterion of the time at which the wound was made; for as long as the body retains its warmth this apparently vital process may take place.

Where coagulated blood is found in wounds upon a dead body, it cannot safely be concluded that the wounds were produced before death, upon the ground that "blood cannot coagulate after death." This is one of the many erroneous notions which have remained undetected from the habit of treating medical jurisprudence in a merely theoretical way. Engle is right when he says: "I do not believe that there is any disease or manner of death after which the blood does not coagulate in the dead body. Some special cases may be cited, where it has not occurred, but many other cases may be adduced where it has occurred after the same disease or manner of death." This coagulation of the blood must follow peculiar laws which are as yet unknown; for it not only takes place after those kinds of death of which a fluid state of the blood is characteristic, as after different kinds of suffocation—but, what seems quite inexplicable, the coagulation occurs in many organs and vessels sooner than in others, not only in the heart (the right ventricle), but also in the inferior vena cava, the liver, etc. The proposition that "coagulated blood around or in a wound shows reaction during life, because no coagulation of the blood can take place after death," is, with all its consequences, erroneous.⁵

⁴ 2 Wh. & St. (part 2), § 691.

⁵ 2 Wh. & St. (part 2), § 974.

It has also been demonstrated that the blood will coagulate hours and, indeed, in at least one case, four days after death. This was in the case of a man poisoned with coal gas.

The swollen and everted condition of the lips of the wound, which is considered such a good indication that the wound was inflicted upon a living person, may be removed by causes acting after death, such as the body having lain in water, especially if it be a fat body.

Where a wound involves the breaking of the skin the amount of hemorrhage is a good test of the period at which a person was wounded. While there may be a flow of blood from a post mortem wound, the amount lost is comparatively trifling and of a venous character. How important this question may become was illustrated in a case of assassination tried in Berlin, where the head of the murdered person had been severed from the body, but there had also been inflicted other injuries of a fatal nature. Dr. Caspar gave it as his opinion that the head had been severed before death, for the reason that a very large amount of blood had been effused from the cervical vessels.

Although in contused wounds the coagulation of the blood under the surface injured sometimes affords, especially in injuries of the head, an indication of the blow having been given during life, on the other hand, the want of coagulation is no proof that it was not inflicted till after death. The blood from various causes may remain fluid after death. If, for instance, the person murdered has had scurvy, or his death was caused in part by any mode of asphyxia, the failure of the blood to coagulate would not be decisive of anything. The color of what is called an ecchymosis varies according to the time elapsed since the blow was given; at first it is purple and passes through various shades to black, then through violet, green and yellow until it disappears. Generally the discoloration appears many hours after the injury, but it may appear immediately afterwards; the violet color on the third day; the green from the fifth to the sixth day, and the complete disappearance in healthy persons from the tenth to the twelfth day. The changes are more rapid in the young than in the old, and depend also upon the force and extent of the blow. If the extravasation be deeply

seated, the external discoloration may not occur for several days; and, in parts where the cellular tissue is abundant, will not always be found under the spot on which the injury was received, but will be found over that to which the blood has gravitated. Blows inflicted after death produce similar appearances to those inflicted before death except as to extent of discoloration, which may not so clearly indicate the severity of the blow. It is in this connection important to remember that where death has been caused by violence it is extremely common, especially where the bones lie immediately under the skin, to find suspicious spots upon the body. When the cause of death is unknown, or attended with suspicious circumstances, these spots demand the closest examination and description, as they may throw light upon the struggle in which the life was lost. Generally, however, it will be found that these are caused by the body striking upon some hard substance in falling and are not the result of the wound which caused the death. Intense heat produces the same effects upon a dead body as upon the living. Scalding liquids, however, do not blister a dead body, but only cause the outer skin to peal off.

§ 103. Weapon used.—When it appears that death was caused by violence it is very important to determine the means, and an external inspection is not always satisfactory or instructive. An early post mortem is important as putrefaction, maceration in water and other causes may seriously affect the appearance of the wounds. An incised or punctured wound is one given by a weapon with a sharp cutting edge or point, and its appearance at once suggests the cause; the cause of a contused or lacerated wound is not so readily apparent, and hence the medical witness should not be hasty in reaching an opinion on that point.

In an incised wound the superficial extent of the wound is usually greater than its depth; in a punctured wound, the reverse is the case. In both these classes of wounds, the edges are cleanly cut, separated and not contused unless the cutting portion of the weapon has been dull or was considerably convex. The regularity and evenness of the incision is, therefore, a mode of distinction between wounds inflicted with weapons, properly

so called, and those made by glass, crockery, nails, etc. The portion of the body where the wound is inflicted, the particular tissues divided, as well as the state of the skin, that is, whether relaxed or stretched tight, and the direction in which the blow is given, all affect the shape of the wound. A single wound may be found in the skin and two internal wounds. This might be caused by partly withdrawing the instrument and plunging it into the body in another direction. In case of lacerated or contused wounds, while a medical witness may be enabled to state the possibility of the wound having been produced with a blunt instrument, he cannot deny that it may have been accidentally caused as, for instance, being the result of a fall. The position of the wound compared with the known relative positions of the parties at the time the injury was received will be the chief source of information.

But caution must be exercised in taking into consideration the relative positions of the parties, for it is well nigh impossible to say from that alone the direction or course of a bullet when the death was caused by fire arms. It frequently happens that a blow with a blunt weapon will cause the rupture of some internal organ. Gunshot wounds, whether made by rifle balls or small shot, are so well marked that the appearance of the wound affords much light upon the question as to the distance from which the shot was fired.

§ 104. Suicidal wounds.—An examination of the wound itself is necessary to determine whether a wound was accidental, suicidal or homicidal, and the medical witness should be advised of the circumstances under which it was produced. Suicidal wounds are generally inflicted upon those parts of the body most accessible to the hand, as the head, neck and anterior part of the trunk. If inflicted by firearms they will generally be found in the head or over the heart, and if by a cutting instrument, the neck is usually selected. Its location, however, is only presumptive evidence as to its cause, and suicide is not always committed with weapons. A case is reported where a woman laid her head on a block and endeavored to kill herself by blows on the back of her head with a hatchet.

A case is reported where a man stood before a looking glass and struck repeated blows on the top of his head with a hammer weighing about three pounds, and succeeded in causing a fracture of the skull two inches in diameter and depressed three-quarters of an inch, with fissures extending therefrom in various directions.

A stone cutter drove into his head two stone chisels, each eight and a quarter inches long and three-eighths of an inch in diameter, with a flat point. To do this he used a mallet weighing over two pounds; he drove one of the chisels into the right temporal region until it projected over an inch from the left temporal, and the other in the center of the forehead; and yet he was able to walk nearly forty feet without aid. Soon after the chisels were removed he died.

The direction of a wound is generally more important in determining whether it is homicidal or accidental than whether it is suicidal. Thus where a woman accused of murder claimed that she held the knife in her hand sloping upwards to deter the deceased from attacking her, and that he stumbled and fell on it, whereby the fatal wound was inflicted, the medical evidence clearly showed that the wound was downward and the blow delivered with considerable force. In addition to this, remember that an alleged suicide may have been left-handed or ambi-dexter, so that in determining whether the blow was suicidal the direction of the wound is only valuable as corroborative of the other facts disclosed. The position of the body and the weapon used are often important elements in arriving at a correct solution of the causes of death. If death ensues from sudden and abundant hemorrhage, the weapon generally falls from the hand; where caused by a pistol shot through the head, the weapon will generally be found tightly grasped in the hand. Where death does not follow immediately it is a matter of no importance whether the weapon is grasped in the hand or not. While it is possible, it is hardly probable, that after a homicidal wound had been inflicted the assailant could place the weapon in the hand of the victim so soon that it would be found tightly clasped by him. The fact that the weapon was found near to

or away from the deceased is a matter to be given very little weight.

In the case of Burton, who was found dead in Newport, Rhode Island, in October, 1885, with a bullet wound in his skull and also in his heart, the late Prof. Agnew, called as an expert witness by the persons accused of murdering Burton, announced the following as his conclusions as an expert:

1. It is possible for a ball to enter the brain without destroying consciousness, though it may for a few minutes cause some mental confusion.

2. A ball may traverse the brain without causing muscular paralysis.

3. A man may, with his own hand, first shoot himself in the head and within the lapse of a minute inflict a similar wound in the heart.

4. A suicide may first discharge a ball into the chest, wounding the heart, and immediately after send another into the brain.

There are undoubtedly cases which support this expert opinion of Prof. Agnew, but the defendant in the Burton case pleaded guilty to murder, and so Prof. Agnew was not called as a witness.

Should cases occur in medical examinations with the opening of the wounds in such unusual places as to raise the question of suicide or homicide, the following would have to be taken into account:

1. The possibility of reaching the part of the body in which the wound is located. The examiner might assist in determining this by attempting to place in the corresponding part of his own body the muzzle or point of the weapon, if found, or a similar one, with his right or left hand.

2. Certain well-known appearances, such as burning, singeing, dark discoloration, and hardening of the parts close to the wound *must* be present in gunshot wounds for a theory of suicide; but they do not *prove* this by any means, because they do not exclude the possibility of the close application of the weapon by a second person to an individual while asleep, drunk or otherwise stupefied.

3. Other items, such as signs of resistance, traces of a struggle, of robbery, or of injuries, should be looked for. The character of the locality, the condition of the clothing, and the circumstances under which the killing took place should be considered. An apparent motive for suicide, or a written or verbal expression of such an intention, should be carefully weighed in order to assist the examiner to give an opinion, or one that shall at least indicate the probability, for such expressions may be manufactured for a purpose.

§ 105. Blood stains, hairs, etc., as evidence in homicide cases.

—The examination for blood stains and their examination when found, is a subject full of interest, as is also the detection of hair and cerebral matter for the purpose of proving criminal acts and punishing criminals, referred to here only to call attention to the extent to which scientific knowledge has at this day been carried; and how efficient an agent it is in criminal prosecutions is illustrated by the following case reported by Wharton and Stille. In Norwich, England, a female child, nine years old, was found lying on the ground, in a small plantation, quite dead, with a large and deep gash in the throat. Suspicion fell upon the mother of the murdered girl, who, upon being taken into custody, behaved with the utmost coolness, and admitted having taken her child to the plantation where the body was found, but declared that while there the child was lost by getting separated from her while searching for flowers. Upon being searched, there was found in her possession a large and sharp knife, which was at once submitted to minute and careful examination. Nothing, however, was found upon it, with the exception of a few pieces of hair adhering to the handle, so exceedingly small as scarcely to be visible. The examination being conducted in the presence of the prisoner, and the officer remarking: "Here is a bit of fur or hair upon the handle of your knife," the woman immediately replied: "Yes, I dare say there is, and very likely some stains of blood, for as I came home, I found a rabbit caught in a snare, and cut its throat." The knife was sent to London, and, with the particles of hair, subjected to a microscopical examination. No

trace of blood could at first be detected upon the weapon, which appeared to have been washed; but upon separating the horn handle from its iron lining, it was found that between the two a fluid had penetrated, which turned out to be blood, and certainly not the blood of a rabbit, but bearing every resemblance to that of the human body. The hair was then submitted to an examination. Without knowing anything of the facts of the case, the microscopist immediately declared the hair to be that of a squirrel. Around the neck of the child, at the time of the murder, there was a tippet, or "victorine," over which the knife, by whomever held, must have glided; and this victorine was of squirrel's fur. Here was found sufficient evidence to convict the mother of the crime, and the truthfulness of the testimony was shown by her subsequent confession.⁶

§ 106. Cause of death from wounds.—Wounds become the cause of death either directly or indirectly. In the first case death is the necessary result and follows immediately or nearly so; and death results either from hemorrhage, shock or great mechanical injury. In the second, the injury is the remote cause of the death; other causes intervene, by which death is either hastened or delayed. In these cases great care is required of the medical witness in determining whether the fatal result was caused by the wound or by the intervening causes, whether of unskilful treatment, disease, or the conditions of the organs of the body.

Sometimes a wound, which under ordinary circumstances would not be immediately fatal, becomes so in consequence of some abnormal or diseased condition of the body. An undue thinness of the skull, a displacement of the viscera, an abnormal distribution of the arterial trunks, an aneurism, a hernia, and many other similar defects may prove the occasion of a wound being rapidly fatal, which otherwise would not necessarily have been so. And old age, infirmity of any kind, or a highly excitable condition of the nervous system may hasten the ap-

⁶ 2 Wh. & St. (part 2), § 768.

This subject is treated generally, *post*, §§ 131, 132.

proach of death. Cases have been frequent where, owing to internal disease, such as congestion of the brain, death may occur during a quarrel without a blow being struck. Two inmates of the Soldiers' Home near Dayton, Ohio, became involved in a quarrel and one of them stabbed the other in the abdomen. The man who was stabbed staggered a few steps away and fell dead. A post mortem examination showed that the stab in no way occasioned or hastened his death.

If in the course of an examination in cases of wounds the examiner finds that the fatal result was caused by unskilful treatment by the physician or surgeon, his duty is plain. He should not, however, conclude that such is the case because his method of treatment was not followed; methods may be different, but principles remain the same, and if the correct and approved principles of the science of surgery were followed, the surgeon is not at fault.

§ 107. Burns and scalds.—Burns and scalds are not, strictly speaking, wounds, although, legally, they come under the designation of bodily injuries. A burn is an injury to the body caused by heat applied in the form of a heated solid substance, by flame or by radiant heat. A scald is an injury produced by a liquid, heated above a certain point, applied to the body. The effects of corrosive liquids, such as sulphuric and other mineral acids and the strong alkalies, closely resemble burns, and are regarded as burns in law, although a high temperature is not required for their effects. Boiling liquids taken internally may produce internal scalds.

The intensity of a burn is dependent upon the degree of heat applied; it varies from a slight redness to a complete charring of the tissues. Metals heated to redness produce very severe burns, even to the destruction of the flesh, but if in a state of fusion, the injury is yet more serious, in consequence of the partial adhesion of the molten mass to the skin. Boiling oils produce as decided effects as hot solids or molten metals. Boiling water causes scalds, more or less severe, attended with blisters containing serum, but it never chars or destroys the tissue

§ 108. Classification of burns.—According to Dupuytren, burns may be classified as follows, according to their gravity:

1. Superficial inflammation of the skin without the formation of blisters.
2. Vesication or blisters, containing serum, sometimes clear, sometimes opaque and of a yellowish white color, or sometimes bloody. If the cuticle be removed the true skin is very red and granulated, and secretes pus.
3. Destruction of the external surface of the true skin, forming an eschar, which is soft and yellow if made by a liquid, and hard and brown or black if made by a heated solid or burnt with a flame. The surrounding skin is red and blistered. This form of a burn leaves scars which are on a level with the skin or nearly so, and are white and shining.
4. Disorganization of the whole skin; this differs from the preceding only in the deeper destruction of the parts and in the greater thickness of the sloughs. The resulting scars are irregular, radiated and puckered, and depressed below the level of the skin.
5. Not only the skin, but the subcutaneous cellular tissue and a portion of the muscles underneath are destroyed. This injury is graver in its character than the last, although the external appearances are not strikingly different.
6. Complete carbonization of the burned part, as when a portion of the body is roasted by the fire.

§ 109. Burns before and after death.—An important medico-legal question frequently arising is, was the burn upon the body made before or after death, for it often occurs that an assassin, after committing murder, will set fire to the building to conceal his crime.

The result of investigation and experiment is that except in dropsical subjects the presence of blisters containing serum indicates that the burn was made during life, or immediately after death, while the body was still possessed of a certain degree of organic vitality. Their absence, however, should not be regarded as proof that the burn was not inflicted during life, since blistering is not always a necessary result of a burn; besides,

it is quite possible that only the more serious results may be visible. In all doubtful cases the cuticle should be examined with a lens, in order to find minute apertures through which serum may have escaped, if any such existed. There is another sign, which, by most authorities, is claimed to be conclusive because it can not be simulated upon a dead body, viz., the congested and inflamed state of the skin around the blister or burn, evidenced by a red line which gradually merges into the color of the surrounding skin. This red border remains after death.

§ 110. Danger from burns; death resulting from other causes
—**Post mortem.**—The danger from burns depends more on their extent than their depth, because extensive burns involve a greater number of sensory nerves, and a greater extent of surface is prevented from performing the functions of excretion and heat regulation.

Burns are more dangerous in the young than in adults; more so on the trunk of the body than on the limbs, and more so if in separate patches than if continuous, provided they are of equal extent. Gunpowder burns are considered more dangerous than those produced by steam.

The immediate cause of death in cases of burns, may be bodily injury, as from falling timbers, jumping from a window, etc., suffocation, shock, coma, convulsions or tetanus, bronchitis, pneumonia and other thoracic symptoms, enteritis and peritonitis, exhaustion, gangrene, pyæmia, etc.

The *post mortem* appearances are often by no means well marked, the most common lesions being the result of a capillary injection of the mucous membrane of the alimentary canal and bronchi and serous effusion into the ventricles of the brain. Where death ensued from injury or suffocation, the usual lesions could, of course, be discovered, but where the body has been completely charred or roasted, it would be difficult to determine whether death had preceded the burning or not. From the fact that an assassin frequently attempts to destroy the body of his victim by fire, the examiner should always carefully examine the body for wounds. The effects of fire upon the body may cause fissure in the thorax or abdomen, or in the neighborhood

of the large joints, which should not be mistaken for wounds. These fissures are generally irregular in form, and as the blood vessels, on account of their elasticity, are apt to escape being torn, they may be seen intact stretched across the fissure. This appearance always indicates that the opening was caused by heat and not by a wound.

Where the heat has been excessive, the bones of the deceased may be found more or less cracked or split, and sometimes even crumbled to pieces. Dr. Wyman, in his evidence in Dr. Webster's case, stated that "some of the fragments of the bones of Dr. Parkmen's skull had the appearance of having been broken previous to burning. Burning removes the animal matter which gives to bone its tenacity; before this is removed it breaks with sharp angles and is more likely to splinter. After calcination the bone is more likely to crumble."

Two old people were found burned in their house, both bodies being almost destroyed by the fire; but the fact that they had been previously stunned, if not killed, by blows on the head, was ascertained by the existence of fractures of the skull under which coagulated blood was found effused upon the dura mater.

§ 111. Spontaneous combustion.—Much has been written and said on the subject of spontaneous combustion, and the authorities are not agreed upon whether such a thing is possible; but there are certainly well authenticated cases where no other explanation seems possible, and the following in such a case: A washerwoman, fifty years of age, and of intemperate habits, returned to her lodgings one evening in December in a state of drunkenness. Her room was not more than ten feet long by six to seven feet wide, and was lighted by two little windows from a corridor. The only furniture consisted of a chair and a chest in the corner, and at the windows there were muslin curtains. There was no bed. The next morning at 8 o'clock, the neighbors, perceiving a strong smell of smoke, entered her room and there found the unfortunate woman upon the floor almost completely burned, with her feet turned toward the chimney place, in which, however, there was no fire. Under one of her arms there was still a portion of the chair upon which

she had evidently been seated, and underneath her an earthen pot, such as is used by the poor to hold a few coals to warm their feet. The chair was almost entirely burned, the floor was covered with a black soot, and an exposed beam in the wall of the room was charred upon the surface. The chest was, however, untouched by the fire, as were also the muslin curtains, which were only three feet distant from the body. The body was sent to the morgue, and examined by direction of the judicial authorities. The body was lean; the face and hair, the anterior portion of the neck and upper part of the shoulders were not injured. The skin and muscles of the back were, however, thoroughly burnt, as were also the sides and anterior portion of the trunk. The anus and vulva escaped. Nothing was left of the upper extremities but the bones; there was, however, a portion of the chemise in each armpit still intact. The upper portion of the lower limbs was also burnt. The stockings were entire.⁷ Nothing apparently but spontaneous combustion could account for the death of this woman, and so the medical authorities reported.

Charles Dickens, who was very fond of finding a means of death suited to the peculiar habits and conduct of his characters, has Krook in *Bleak House* disappear in the soot and grease of spontaneous combustion; and his description of Krook's room, immediately after his death, corresponds to what the medical authorities say, characterize death in this unusual manner.

In examining the reported cases of spontaneous combustion the following characteristics or most of them will be found in each case:

1. The extent and gravity of the burns is altogether out of proportion to the apparent external cause.
2. The victims have been inordinately addicted to the use of spirituous liquors.
3. Women are more frequently the victims than men.
4. The great majority are aged and corpulent.
5. The combustion of the body has been nearly total, while the adjacent objects have been only slightly or not at all injured.

⁷ 2 Wh. & St. (part 2), § 850.

6. The flame has been difficult to extinguish.

The deposit of a fatty and fetid soot upon surrounding objects can not be considered as peculiar to this form of animal combustion.

§ 112. Death from heat.—The effects of extreme heat on the human system are frequently witnessed in tropical and semi-tropical climates, during the heated term, in the mortality arising from what is commonly called sunstroke. In such cases the dangerous and fatal results are attributable directly to solar heat. But effects equally serious are known to be produced by exposure to artificial heat, if too long continued, as is witnessed in the employés in engine rooms, factories, etc., where a high temperature is habitually maintained. According to Dr. H. C. Wood, there are three distinct conditions of the human body occasioned by excessive heat. In the first (which is rare), there is acute meningitis or phrenitis; in the second, heat exhaustion with collapse, accompanied by a rapid, feeble pulse, cool moist skin and a tendency to syncope; in the third, true thermic fever or heat stroke—that condition which suggests exposure to the sun's rays. This, however, is not necessarily so, for it is said that most of the cases of heat stroke in India come to those who have not been exposed to the sun; and in other countries indoor workers who are subjected to great heat yield to the fever. Those who have indulged in strenuous physical exertion, and intemperate persons yield more easily to the effects of heat; laboring men are more subject to it than women or those who are able to take life more leisurely, and it is always the prolonged exposure to heat which is dangerous.

The symptoms vary in intensity, from a mere headache with drowsiness to complete insensibility, coma, with involuntary restlessness and paralysis. In many instances, death appears to be caused by paralysis of the heart. The breathing in cases of sunstroke is always affected, sometimes being stertorous and sometimes deep and labored. In many instances the pupils are fixed, sometimes dilated, sometimes contracted; the face and often the whole surface is congested. The motor nervous system is almost always disordered; there are present subsultus tendinum, rest-

lessness, and at times partial spasms or general convulsions. The pulse is rapid and becomes intermittent, irregular and thready. In some cases before death the patient appears to be completely paralyzed. The nature of sunstroke is that of fever, not dependent on blood poisoning, but upon heat, and in such cases a peculiar characteristic odor is exhaled.

In some cases we find decided congestion of the brain and its membranes, with serum in the ventricles, together with congestion of the lungs and of the abdominal viscera generally, and an appearance of the heart as in ordinary death from asphyxia. In other cases there is anaemia of the substance of the brain, along with distension of the larger vessels with dark fluid blood, but the minute vessels are empty. The heart pallid, flaccid and softened, while the other muscles of the body may be florid and firm. The lining membrane of the heart and the larger blood vessels almost purple in color and the lungs gorged with dark fluid blood. Ordinarily, death comes on by reason of direct paralysis of the respiratory centers from the effects of the excessive heat causing suffocation.

That excessive heat does not always affect those exposed to it unfavorably is shown in various ways. In Turkish baths the patient is often immersed in water above the boiling point. A French baker is reported to have remained in an oven heated to 338° Fahrenheit for nearly fifteen minutes. A man by the name of Chamouin, called "the incombustible," gave exhibitions of his power to endure heat. Among other feats he would enter an oven carrying a raw leg of mutton and remain there until it was cooked. Many other instances might be cited of accidental or intentional exposure to excessive heat without injury, but it will always be found that such exposure was in a dry atmosphere.

§ 113. Death from cold.—The effects of cold on the body are depressing, but if they be of short duration and the system healthy, reaction takes place and stimulation follows.

Cases of death by cold do not often require the attention of the medical jurist, but where they do arise his testimony is often as important as in other cases.

If a person is middle-aged, of rugged health, circulation good, clean-skinned and well clad, free from hunger and the alcoholic habit, it is well-nigh impossible to conceive of any degree of cold which would prove fatal.

A common form of infanticide is by exposure of the new born infant to perish from cold. In such a case it will be the examiner's duty to examine the body of the child, and consider all the circumstances of the case: such as the place where it was found, the amount of clothing, the temperature of the air, the length of the exposure, the possibility of its being accidental, etc. He should notice the pallor of the body to see if it is extreme; if frozen stiff, this rigidity should be distinguished from the rigor mortis; examine the arterial color of the blood, and also the accumulation of blood on both sides of the heart and in the larger vessels, and see if there are any marks of violence on the body. If these were necessarily fatal the influence of cold need not be considered, but in all other cases the cold may be considered as necessarily hastening the fatal result.

In the retreat from Moscow, many of the soldiers after they were thoroughly benumbed by the cold were led for a considerable distance by their comrades, but at last their limbs refused to support them, they reeled like drunken men and fell benumbed and lethargic upon their faces and soon expired. A man and wife at Lyons compelled their daughter, aged eleven years, to get out of bed in midwinter, and place herself in a vessel of ice-cold water. She complained of exhaustion and dimness of sight, whereupon her mother threw a pail of ice-cold water upon her head and then death followed at once. Cases of mistreatment of the insane with cold shower baths may give rise to the necessity for medical testimony as to the effect of such treatment.

It is impossible to fix any degree of cold which will be fatal or from the effects of which resuscitation is impossible. What will injuriously affect one person will not another, and the same individual may be affected differently under different circumstances. A case is reported where a cab driver was found insensible from the cold, frozen to his seat and his reins frozen to his hands, and yet he recovered after treatment.

The *post mortem* appearances are not very characteristic, and therefore all the circumstances of the case, such as the season of the year, age of deceased, temperature of the air, amount of clothing, place of exposure, etc., should be carefully considered. In the absence of any other obvious cause, the following appearances have been held to warrant the conclusion that death resulted from cold, remembering that intoxication, infancy, old age, or privation, as well as actual disease, may be predisposing causes:

1. An arterial hue of the blood, except when viewed in mass within the heart.
2. An unusual accumulation of blood in both sides of the heart.
3. Pallor of the general surface of the body, and congestion of the viscera most largely supplied with blood. In some cases congestion of the brain and liver was only moderate.
4. Irregular and diffused dusky red patches on limited portions of the exterior of the body, even in non-dependent parts (distinguishing them from suggillations).

These signs are not so well marked in children as in adults, and, considered singly or collectively, are not to be regarded as very positive indications of the cause of death, and are unsafe upon which to base a *post mortem* diagnosis.

As putrefaction does not occur at a freezing temperature, the discovery of a decomposing corpse in the ice or snow would afford a very strong, though not absolutely conclusive, evidence that the death was not the result of exposure to cold, but rather that the body had been frozen after death.

Death from heat or cold has a medico-legal importance only because it may occur in places and under circumstances which demand investigation in order to determine whether the death was due to violence.

§ 114. Death by lightning.—Cases of sudden death from this cause are by no means rare, and it is seldom that the attendant circumstances do not clearly indicate the cause of death. But it may happen that a body will be found remote from any dwelling and no witnesses of the actual death, and it is not impossible

that there may be a lightning stroke neither preceded nor followed by thunder or rain. Then it will be for the medical witness to determine the cause of death.

Five negroes were simultaneously prostrated by a single stroke of lightning on a plantation in Georgia. The sun was shining brilliantly at the time, and a greater portion of the sky presented the usual serenity of summer. A singular and rather angry looking cloud had for a short time previously been observed near the verge of the southeastern horizon, from which occasionally proceeded the low rumblings of very distant thunder. But nothing in the appearance of the heavens betokened the immediate proximity of a thunder storm, or prepared them for the terrible electrical explosion which followed. Not a drop of rain had yet fallen, and the earth was quite dry. Such was the condition of things when suddenly the whole atmosphere in the neighborhood was momentarily illuminated by what appeared to be a universal flash, which was followed by a single astounding report. No dust was observed to rise from the ground, nor any other evidence of mechanical violence. No thunder was heard after this explosion; the cloud quickly dispersed, precipitating only a little rain a few minutes after the accident, and in the course of an hour the atmosphere resumed its usual tranquility. The five negroes were taken up in a state of insensibility amounting to apparent death. Three of them had been instantaneously killed. In two no marks of injury were discovered; in the third, there was a burnt spot of the size of a dollar under the right armpit; the other two recovered. One of these was a woman aged seventy years, and the singular fact is stated that in her the catamenial discharge, which had, in the ordinary course of nature, ceased for more than twenty years, was completely re-established and continued down to the time of the reporting of the case a year after it happened.⁸

In cases of death from this cause the body is sometimes found in exactly the position occupied by the person in performing the last act of his life. Thus, a woman was struck while plucking a flower, and her body was found standing nearly erect, with

⁸ 2 Wh. & St. (part 2), § 878 n (z).

the flower in her hand. On the other hand, so varied are the vagaries of a lightning stroke, the person struck may be hurled violently for some distance from the place of the stroke. Indeed, it is reported that in one instance the body of a stricken person entirely disappeared.

The clothes are torn and burnt, or completely stripped off; the foot covering may be split open; metallic articles upon the person, if in the track of the fluid, are fused, and there will be found upon some part of the person, usually about the head and shoulders, a reddened spot, a lacerated puncture or a discolored streak, or it may be a cut like that made by a sharp knife, indicating the point at which the electric fluid has entered the body, and its course may be marked by what appears to be a superficial burn. A great many cases have been reported where it was claimed that images of trees and other objects have been found imprinted on the skin of the persons struck or exposed to its vivid glare. Such resemblances, however, are more seeming than real, and in fact represent the forking of the electricity in the skin. They are usually found on the arms or trunk, and are almost conclusive of the cause of death.

Frequently severe injuries to the eyes are attendant upon a fatal lightning stroke. The amount of visible injury is generally very trifling, and although the skin may be contused and lacerated, it does not appear that there is ever any actual burning of the skin unless the clothes have been set on fire by the electric fluid; sometimes no marks are found; in such a case the cause of death is undoubtedly the returning stroke, the body being the conductor of the electricity returning from the ground to the clouds. When there are no external marks the cause of death may be doubtful, but a post mortem examination can hardly fail to reveal the cause. If there is any suspicion of poisoning, as some poisons act very rapidly, a chemical analysis should be made of the contents of the stomach.

The destructive effects of lightning exactly resemble those of a powerful electric battery; the electric condition or polarity of the cloud is nearly always positive, while the earth immediately beneath it is negative; and in this condition the disruptive discharge ensues, through the air or any other body that may hap-

pen to intervene. The capricious action of this discharge is shown by the fact that out of a party of three or four sitting under the same tree, one may be killed and the others escape; or a person under a low tree may be struck, although there are high trees or lightning rods in the immediate vicinity. The different action of lightning on clothing may be explained by the fact that some of it is wet and, therefore, a good conductor, and other parts dry and hence a poor conductor. In cases of death by lightning, the rigor mortis occurs immediately after death. Coagulation of the blood occurs, but it is delayed; the face is often bloated and discolored, and putrefaction is usually very rapid. Occasionally fractures of the skull and other bones are found and the blood is dark and fluid. The brain and its membranes generally suffer most severely, the head being usually the part first struck. Congestion of the brain, effusion of blood under the skull and into the ventricles, and even complete disorganization of the brain substance have been observed. The lungs are sometimes found congested and injured, and the air tubes full of mucus. The stomach, intestines, liver and spleen are also congested, while the heart does not exhibit any special alteration. Sometimes the autopsy will reveal none of these appearances, but others equally noticeable. One body may present the appearance of having been frozen and another of having been petrified.

§ 115. Death by electricity.—Closely allied both in cause and effect to death by lightning is death by electricity, for the same agent causes both. In these days, since the introduction of electricity into our daily lives, this subject has required and received more attention than formerly. The many wires stretched above our heads, while more numerous in our cities, are also a source of danger wherever we may go, and added to these is the deadly third rail, as it is called, of the traction line which lies along the ground at our feet.

In several of the States electrocution has taken the place of hanging as the punishment for murder in the first degree. When it was first sought to inflict this punishment, the right thus to take life judicially was contested upon the ground

that the punishment was "cruel and unusual," within the inhibition of the constitution, but the courts uniformly held adversely to this claim. Then when the law was put into actual operation in New York a great controversy arose as to the possibility of reviving a criminal who had been electrocuted. Pamphlets were written and addresses made to show, not only that this was possible, but it was even carried so far that some of the opponents of electrocution asserted that most if not all of those electrocuted were only stunned, or rendered unconscious, by the electric current, and were really done to death on the dissecting table, to which, it was said, the victims were hurried. Indeed, a writer in a recent encyclopedic article, used this language in speaking of death by electricity: "The chance of resuscitation by artificial respiration, etc., when immediately resorted to, is very promising."⁹ But this passed away, and it is now regarded as the most humane way of administering the death penalty, and those States which have adopted it will never return to the brutal punishment of hanging.

When a wire or other body charged with electricity is clasped in the hand, and this is usually the form in which the current is received, the muscles immediately contract and remain rigid until the current is turned off or diverted. In such a case it is well-nigh impossible to release the hold of the victim, and in addition thereto the person endeavoring to do so is in great danger of receiving a secondary and fatal shock himself. All the muscles of the body are thus contracted and rendered rigid, and if the victim is in the air, as, for instance, a lineman who has grasped a live wire, when the current is turned off all the muscles relax and if he has escaped death from the shock the fall to the ground may be fatal.

In judicial electrocutions, the victim is securely strapped in a chair and electrodes are applied to the head and one of the legs and an alternating current of 1,500 or 1,600 volts is applied; the first effect of this is to cause rigidity of the body, which continues until the current is turned off, when a collapse ensues,

⁹ Ency. Americana *s. n.* "Electricity."

accompanied sometimes by spasmodic movements of the chest or the heart.

Post mortem examinations have not revealed any different condition from those found in cases of death by lightning. Of course, there may be superficial burns if the wires have touched the body, and it is supposed, although no certain proof can be adduced, that death by electricity is caused by the fibrillary contraction of the heart.

§ 116. Death by starvation.—A person may starve himself to death; he may perish from the want of food, being unable to procure, to swallow, or digest it; or he may be purposely deprived of it. Medical evidence can only establish the fact that death resulted from starvation and, generally, the physical cause of it, but can not, of course, determine whether the act was voluntary or homicidal. In cases of young children it is reasonably certain that it was homicidal; in case of adults, that it was suicidal. Acute starvation implies the sudden and complete deprivation of all food. Chronic starvation is the result of a continued deficient supply of food, both in quantity and quality. As the result of disease, chronic starvation is a frequent cause of death, as is witnessed in stricture of the œsophagus, cancer, disorders of the stomach, disease of the pancreas, marasmus, etc. It is likewise the cause of disease and death in young children fed upon unhealthy milk (either from nurse or cow), where this fluid is deficient in some of its proper constituents, thereby causing defective nutrition. Such cases are abundantly illustrated in the miserable victims of baby farming. This is also witnessed on a large scale in districts of country where famine has prevailed, as in certain parts of India and in Ireland in 1847. Dr. Donovan gives the following description of those who suffered from this famine: “The pain of hunger was at first very acute, but after twenty-four hours had been passed without food, the pain subsided, and was succeeded by a feeling of weakness and sinking, experienced principally in the epigastric region, accompanied by insatiable thirst, a strong desire for cold water, and a distressing feeling of coldness over the whole body. In a short time, the face and limbs became fright-

fully emaciated, the eyes acquired a most peculiar stare, the skin exhaled a peculiar and offensive fetor, and was covered with a brownish, filthy looking coating almost as indelible as varnish. The sufferer tottered in walking, like a drunken man; his voice became weak, like that of a person with cholera; he whined like a child, and burst into tears on the slightest occasion. In respect to the mental faculties, their prostration kept pace with the general wreck of bodily power; in many there was a state of imbecility; in some, almost complete idiotism; but in no instance was there delirium or mania, which is often described as a consequence of protracted abstinence among shipwrecked mariners.”¹⁰

There have been many real or pretended cases of abstinence from food, as in the case of the Welsh fasting girl, in 1869, who claimed to have lived two years and two months without food, but who, when closely watched so that it was impossible for her to obtain any food or drink, died on the ninth day. She refused food when offered her, and her death resulted in her father and mother being sent to prison for killing her. Other instances are those of Dr. Tanner and the Italian, Succi, of more recent years, whose only object was notoriety; but all such cases should be received cautiously, unless they are shown by indisputable testimony of reliable medical witnesses to be real fasts.

The symptoms of chronic starvation are well pictured in Dr. Donovan’s description of the Irish peasants in the famine of 1847, given above.

The post mortem will show great emaciation of the body, with an almost entire loss of fat; the skin shrivelled and emitting a disagreeable odor somewhat suggestive of ether, the muscles pale, soft and wasted; the brain sometimes congested, in others pale and soft, with effusion of serum on the surface and in the ventricles; the lungs healthy or anaemic; the heart more or less contracted and void of blood; the stomach and intestines contracted, thin and transparent, the latter usually empty; the bladder contracted and empty.

The law does not require the absolute deprivation of all food

¹⁰ 2 Wh. & St. (part 2), § 887.

to be proven, but only that the necessary quantity and quality of food and drink be withheld, provided this has been done with an evil intention.

A very fat person will survive longer without food or drink than a lean person; a supply of drinking water will prolong life in the absence of food. Bodily condition as to health or otherwise is not much of a criterion, as an invalid may survive longer than a well person if each is deprived of food and drink.

Unless there is an absence of disease sufficient to have induced the emaciation and anaemic condition described, death can not be attributed to starvation. There are many diseases which would produce a similar condition of the body, some by mechanical obstruction to the ingestion or chylification of the food, and others by their baleful effect on the system generally. Hence, the medical witness should be especially careful about attributing the death to starvation from the post mortem appearances alone, especially if the deceased had any chronic disease. The principal organic diseases which produce appearances of starvation are: Stricture of the oesophagus, malignant disease in any part of the body, Addison's disease in certain phases, diabetis, tuberculosis, dysentery or chronic diarrhoea.

§ 117. Death by suffocation.—Although the general definition of suffocation may not improperly include all those modes of death in which the respiration is mechanically prevented, the purpose at this point is to call attention to those modes of suffocation which do not directly fall under the specific heads of drowning, hanging or strangulation. These are exceedingly numerous and comprise all those cases in which by any means air is excluded from the larynx, or the chest prevented from expanding to receive it. They may, however, be divided into four groups:

1. When the mouth and nostrils are obstructed by the hands or other foreign body.
2. When death is produced by pressure on the chest or abdomen.
3. Burial in the earth, sand, ashes, snow, etc.
4. Inclosure in a narrow space, as a box or closet.

Persons buried alive under falling earth or ruins perish by suffocation.

When a foreign body becomes impacted in the air passages and death ensues by suffocation, a medical examination becomes very important, as the cause of death is not apparent. This may occur from over-haste in eating, and has even occurred in the act of vomiting; or by the detachment of a diseased bronchial gland, which becomes impacted in the larynx; or a lumbricus may ascend from the stomach and enter the larynx; and it may result in cases of tonsilitis, diphtheria, and in very young children in bronchitis; and a case is reported where a sudden constriction of the œsophagus resulted in the death of a child three years old, by suffocation. Children are frequently suffocated from drawing peas, marbles, etc., into the windpipe; or by being lain upon by those with whom they are sleeping. At one time under the Prussian penal code mothers and nurses were punished by imprisonment if they took children under two years of age to bed with them. A drunken person may fall on his face in dust, snow, water or any similar substance and thus be suffocated. That persons may and have committed suicide by suffocation is well established, generally with insanity as the cause.

In Germany a girl twenty-five years old, after trying to kill herself with an ax, crawled into a chest four and one-half feet in length and of proportionate depth. This chest closed with a spring lock, and the key to it was found in her hand when the box was forced open. In another case a girl suicided by pushing a ball of hay the size of a goose egg down her throat; a handkerchief, rags or paper, and even cork have been used for this purpose. Murder may be committed by suffocating the victims, but they are generally infants, aged persons, or otherwise helpless. The notorious Burke and his accomplices accomplished their purpose by covering the mouth and nostrils of their victims and pressing their whole weight on the breast, and it was impossible to tell from outward appearances that the death was not natural. Where a ravisher had overpowered his victim, he held his hand over her mouth to prevent any outcry, and thus suffocated her. In another case, after a drunken spree in which

a number of persons participated, an examination of the dead body of one of the women disclosed the cork of a quart bottle tightly inserted in the upper part of the larynx, the sealed end uppermost. It was claimed on the trial of the person accused of the murder, that this was the result of an accident, following upon the victim's drawing the cork with her teeth. But the facts that the sealed end was uppermost and that the marks of a corkscrew therein were visible, ought to have shown the shallowness of this claim, but it was enough for the jury to find "not proven."

Because this crime may be accomplished without leaving any traces behind, it is very common, especially in cases of infanticide. The symptoms in such cases are those of asphyxia, and it is important therefore to know the post mortem appearances in such cases.

They are: Lividity and swelling of the face and lips, though sometimes in accidental cases the face is placid; the eyes are congested; minute ecchymoses appear on the neck and chest: mucous froth, sometimes bloody, about the mouth and nose; the lungs and right side of the heart may be gorged with dark blood, although in some cases, especially of young children, the lungs may be empty of blood and emphysematous. Some authorities lay great stress upon the conclusiveness of the presence of minute punctiform ecchymoses, especially on the lungs of new born infants, as proof of death by suffocation. These spots are also found on the pleura, lining membrane of the heart, membranes of the brain, peritoneum and mucous lining of the windpipe. The blood is dark and fluid, and the kidneys deeply congested. Some authorities deny that these extravasations are peculiar to cases of suffocation, and the examiner must remember that they are also found in other forms of death by asphyxia; it is, therefore, important that he should not be hasty in expressing an opinion as to the precise cause of death.

As an example of the uncertainty of the conclusions to be drawn from a post mortem in such cases, Christison says of Margery Campbell, one of Burke's victims: "In the body of the woman, no person of skill, whose attention was pointedly excited by being told that from general circumstances murder was

probable, but the manner of death was unknown, could have failed to remark signs that would raise a suspicion of suffocation. But if his attention had not been aroused; if, for example, he had examined the body in the anatomical theater of a hospital without knowing that suspicions, from general circumstances, were entertained regarding it, he might have inspected it even minutely and yet neglected the appearances in question. Nay, a person of skill and experience would have been more likely to do so than another, because every one who is conversant with pathological anatomy must be familiar with such or similar appearances as arising from various natural causes."¹¹

If a dead body is found in sand, earth, ashes, or other similar substances, and the substances are found in the air passages, oesophagus and stomach, the examiner may safely conclude that the person was alive at the time of being covered by the substance. There may be cases of death from suffocation where the victim's head and neck are not buried, and then there will be no inhalation of the surrounding substances. Death by suffocation may result from the inhalation of soot and smoke in a burning building before the heat has any effect.

Experiments have shown that death will result in five minutes after the power of breathing has been arrested.

¹¹ Guy, *Forensic Med.*, p. 294.

CHAPTER XIII.

DEATH BY STRANGULATION, HANGING AND DROWNING—RESUSCITATION—BLOOD STAINS.

§ 118. Death by strangulation— Definition.	§ 125. Suicide or homicide.
119. Appearance in case of strangulation.	126. Death by drowning.
120. Cause of death.	127. Length of time before body rises.
121. Accidental, suicidal or homicidal.	128. External appearance.
122. Death by hanging—Exter- nal appearance.	129. Internal appearance.
123. Internal appearance.	130. Resuscitation.
124. Questions arising—Ap- pearances.	131. Blood stains.
	132. Examination of blood stains.

§ 118. Death by strangulation—Definition.—Strangulation is produced either by pressure upon the neck by means of an encircling cord or by direct pressure made by the hand on the windpipe, as in throttling. It may be accomplished by the hands, a rope, strap, handkerchief, ribbon, or a strip torn from a sheet of the clothing. In Spain the usual mode of executing criminals is by the garrote—a steel or brass collar tightening by a screw in the back. As the screw is turned the collar shuts upon the neck and at the same time the sharpened steel point of the screw enters the spinal marrow and causes death; in Turkey the usual mode is by the bowstring. Death results, in most cases of strangulation, from the combined effect of shutting off the atmospheric air, producing apnœa, and from congestion of the brain, due to the pressure upon the jugular vein, preventing a return of blood from the brain. It differs from hanging chiefly in the fact that in hanging the cord is obliquely around the neck, while in strangulation the cord is wound horizontally around the neck, and in the fact that in hanging the weight of the suspended body is the cause of death. Strangulation is nearly always homicidal, while hanging is very frequently suicidal.

§ 119. Appearance in case of strangulation.—Three questions naturally arise where a case of strangulation is presented, especially when considered with reference to a case of hanging: 1. What are the post mortem appearances? 2. What is the immediate cause of death? 3. Was the death suicidal, homicidal or accidental?

The appearances in case of strangulation are usually very distinctly marked, and are: A livid and swollen face, sometimes mottled; staring eyes with dilated pupils and protruding, purple tongue, which may be bitten; livid extremities; flattened larynx; blood may issue from the nose, mouth or even ears; the face, neck, chest and eyes are studded with ecchymoses; the genital organs frequently turgid, and there may be an escape of urine and faeces, as in hanging.

The marks of the cord, and of fingers on the neck, deserve especial attention. These are more evident and reliable than in cases of hanging, for in homicidal strangulation the murderer is obliged to use considerable force to accomplish his object. If the hand be used, as in throttling, the marks of the fingers will be found upon the front of the throat, sometimes two or more fingers and the thumb, so that the particular hand used to accomplish the deed may be determined. The imprints of the nails, their width, depth and color should be carefully noticed.

If a cord is used, the mark will be horizontal, circular instead of oblique, and sometimes there will be two or three parallel marks where the cord has been wound around the neck more than once. The mark of the cord will generally be more shallow than in hanging, and subcutaneous extravasation is not always found, but the parts below may show considerable infiltration of blood. The mark usually corresponds to the width of the ligature, and the lesion is generally across the front of the neck, where the impression is deepest, below the larynx. While the mark of the cord around the neck may be produced after death, if done within six hours, the other characteristic signs of strangulation, such as livid, swollen countenance, protruding tongue, etc., can not. Therefore, if the murderer places a cord around his victim's neck this ought not to mislead the examiner in making the investigation.

Internally, the right heart and venous system are sometimes gorged with blood, but this is less frequent than in other forms of death from apnea; this is also true of the congestion of the liver and kidneys. Tardieu states that the lungs are seldom very full of blood, but he places great reliance upon the emphysematous appearance of these organs, arising from the rupture of the pulmonary vesicles. The subpleural ecchymoses, which he regards as characteristic of suffocation, he says are rare in strangulation. There are also extravasations of blood in the lungs, but none in the brain, whereby it is distinguished from apoplexy, which it resembles in a few of its symptoms. Froth tinged with blood in the air passages is said to be always found in cases of strangulation. Fractures of the hyoid bone, and of the ossified thyroid cartilage are reported as having occurred. The interior of the larynx and trachea is congested, of a uniform red or violet color, and is coated over with a frothy bloody mucus, which extends also into the smaller air tubes. This internal discoloration of the windpipe should not be mistaken for the early signs of putrefaction of this organ.

§ 120. Cause of death.—The usual form of death in strangling is by apnea. Air is not permitted to enter the lungs, and thus aeration of the blood being prevented, asphyxia ensues. If any other cause enters in to hasten death it is merely incidental and wholly secondary. While death by strangulation, either by a cord or by the hand, might not be so sure as in the case of hanging, for the reason that there is an absence of the weight of the body and because the position of the hands or the cord in strangling might not entirely close the arteries and veins in the neck, yet experiments have shown that it is possible to so grasp the throat as to bring on asphyxia and death with ease, and cases are not rare where such a result has followed without any intention to produce it.

§ 121. Accidental, suicida or homicidal.—Strangulation may be accidental, suicidal and homicidal. Thus, a girl carrying fish in a basket, which was strapped around the upper part of her chest in front, was found dead sitting on a stone wall.

The basket had probably slipped off the wall while she was resting, and thus raised the strap, which firmly and fatally compressed the trachea.¹ Suicidal strangulation is comparatively rare, except among the insane. The simple means with which this may be accomplished, and the rapidity and insidiousness with which unconsciousness steals over the senses under a pressure of the windpipe, thereby taking away the will and power to escape, may readily account for such occurrences.

That suicidal death by strangulation is rare is true, but that it is possible is established beyond a controversy. In such a case, however, the examiner has many outside circumstances to guide him in arriving at a conclusion, such as: Absence of any sign of struggling; the nature of the ligature used; the position and number of the knots; the surroundings; the appearance of the body and of the place where found, and the deceased's previous history.

A case is given upon the authority of Binner of a woman, forty years of age, a sufferer from melancholia, who had made several attempts upon her life. She was found dead, crouched in her bed, with both hands compressing her throat. Her elbows were supported on her knees, and her back leaned against the wall behind. The marks of her finger nails were visible on both sides of her neck.²

In one of Dr. Holland's stories there is a character whose reputation was that of a high-toned Christian gentleman, but who was in fact a swindler in every way. At last he saw that exposure was bound to come, and that speedily, so one night he retired as usual, and then tied his handkerchief so tightly about his neck as to strangle himself. During the night a burglar entered his room, and, thinking he saw a movement in the bed, sprang to it and grabbed hold of the handkerchief. As soon as he touched the occupant of the bed, he found that he was dead, and so completely horrified was he that he did not try to escape, and was captured by those who had heard him. He was tried and executed for murder, although he protested that he

¹ Reese Med. Jur., p. 148.

² Draper Leg. Med., p. 309.

was innocent, and thus the man who had lived by cheating, in his death cheated another of his life.

Homicidal strangulation is the most frequent variety of this form of violent death. It is usually recognized by marks upon the neck and elsewhere, indicating the great amount of violence employed. Thus, the impression of the ligature on the neck will be deeper and more ecchymosed than occurs in suicide; it may also be accompanied by the marks of fingers on the throat, which are seldom found in a suicidal or accidental case. Besides these, there will generally be found bruises and contusions on other parts of the body and marks of a struggle. Marks of homicidal strangulation may be discovered many weeks and even years after burial. In one case thirty-eight days after burial the evidence of strangulation was obtained, chiefly from the striking contrast between the integuments of the neck and those of the rest of the body. There was a white shrivelled space over the larynx half an inch broad; also a groove around the neck of a blackish brown color and parchment like appearance; this condensed skin was difficult to cut, and its section was perfectly dry and hard to cut. Another remarkable case occurred in Paris, where the body had been buried several years and was reduced almost to a perfect skeleton. Orfila and the other medical jurists were enabled to say that the woman died from strangulation, because they found several of the cervical vertebrae, together with the clavicle held together by a blackish mass in the composition of which no tissue could be recognized. This mass was surrounded by several twists of a chord two lines in diameter, much decayed, showing no knots; and its direction was horizontal.³

§ 122. Death by hanging—External appearances.—In hanging, death results mainly from the pressure of the cord upon the windpipe, caused by the weight of the suspended body, by which the access of air to the lungs is cut off. Physiologically, it is the same as strangulation, and, like the latter, the cause of death is partly apnoea and partly cerebral congestion, and more

³ Reese Med. Jur., p. 150.

frequently a combination of the two. It is the opinion of the authorities that the pressure upon the pneumogastric nerves results more speedily in death by hanging than in most forms of asphyxia. There are three factors usually involved in determining the cause of death by hanging, viz.: cutting off the air from the lungs; pressure on the blood vessels of the neck and pressure on the pneumogastrics. If the cord encircles the neck below the thyroid cartilage, which is very rare, being, according to one examiner, six in three hundred, the death is more rapid, and is to be ascribed to apnoea; but, if above the thyroid, the most common case, and as always in executions, where it is apt to slip under the chin, some little space on either side may escape constriction, so as to admit a slight amount of air into the lungs; in such a case, the death will be slower, and be due rather to cerebral congestion. And in other cases it may be across the thyroid. In the great majority of cases, however, the cause of death is of a mixed nature. The signs of hanging, while in general those of asphyxia, will vary in intensity according to the position of the body and the suddenness of death. The weight of the body, the length of the fall, and the physical condition of the deceased must be taken into account. The amount of injury done to the spinal cord will determine the suddenness or otherwise of the death. While in some cases, the face is swollen and livid, the eyes prominent, and the tongue protruded between contorted lips; in others these striking signs of struggling are absent, and the features remain placid or unchanged; these distortions will be found to be cases where unusual violence was used or the drop was far, or in judicial hangings or in murders. The absence of distortion appears more frequently in cases of suicide, but a greater or less congestion of the face is found in many cases, especially where the deceased is heavy, although the face may be pale instead of red. The shoulders and upper parts of the trunk are often livid; the hands and lower parts of the arms are frequently of a purple color, caused by the gravitation of the blood; the arms usually straight and rigid, the fingers clenched. A bloody froth sometimes issues from the mouth, and marks of violence on the neck will differ with the ligature employed and the force ex-

erted. The position of the head varies according to the part of the neck where the rope is placed and the situation of the knot. Usually the head falls forward and inclined away from the knot. The urine and faeces are not infrequently passed involuntarily, the genital organs become turgid and the semen in the male is said to be discharged, but this has no connection with any sexual excitement. These latter signs are not peculiar to death by hanging, and some of them may follow hanging after death.

§ 123. Internal appearances.—The circumscribed bloody spots in the lungs, pericardium and pericranium, appearing in all other forms of suffocation, are absent in this. Internally will be found congestion of the lungs, and the right side of the heart and venous system will be filled with a dark fluid blood. The lining membrane of the larynx and trachea is deeply congested, as in strangulation, and it is sometimes coated with a bloody froth. The vessels of the brain are often congested, but extravasation of blood into the brain or upon its membranes is extremely rare, and sometimes the brain is found pale and bloodless. The brain itself, when cut into, presents numerous bloody points. The spleen, liver and kidneys usually contain a large supply of dark fluid blood; the stomach frequently presents evidences of such deep congestion as to suggest the idea of an irritant poison. The same is also true of the intestines. In some cases coagulate blood has been found on the mucous membrane of the stomach. Among the occasional lesions may be mentioned fractures of the hyoid bone, the thyroid cartilage, the laryngeal cartilages, the cervical vertebrae and rupture of the internal and middle coats of the common carotid artery; but it is said these are never found in suicides. According to Dr. Dyer, a transverse fracture of the crystalline lens is a frequent result of death by hanging, especially if the death was not attended with violent struggling; the pupils are usually dilated, but there is no protrusion of the eyeballs if the suspension is brief. Sometimes the tongue protrudes and is swollen, but more often it is found in its normal state. One important item

as to this member is that if it is found caught between the teeth this is a sure sign that the hanging occurred during life.

§ 124. Questions arising—Appearances.—When a person is found dead suspended by a cord or other ligature, the first question that arises is, was the death suicidal or homicidal. And in order to answer this question satisfactorily, the examiner will first have to determine whether the person was living at the time he was hung. In this connection, it may be said, no reliance can be placed upon a single sign indicative of death from a particular cause, and in no case is this more apparent than in death by hanging; and rarely, if ever, can it be established beyond all real doubt by medical testimony alone that death was the result of the hanging, but that testimony is very material in corroboration of evidence derived from other sources. In persons who are hung, the cord leaves more or less of an impression, according to the strain upon it and its thickness and firmness. The skin under this mark acquires a peculiarly dense and tough character, and has been aptly compared for this reason and from its color, to old parchment. At one time it was supposed that this was a sure sign that the hanging was during life, but experiments have shown that this same appearance can be produced on a dead body by drawing a ligature tightly around the neck. It resembles exactly the desiccated skin, from which the epidermis has been detached, and which has been exposed to the air, and is more marked a few hours after death if the cord has been removed; its color is yellowish brown, and the cellular tissue underneath is likewise condensed and presents a silvery appearance, differing in this respect from extravasation of blood under the skin, the latter being livid or purple. Where there is the parchment like appearance, there is often no ecchymosis, or this is confined to a slight line of lividity upon the margin of the depression; where much violence is used, as in public executions, a livid mark is frequently observed. But as this impression of the cord may be produced by hanging a dead body as long as twenty-four hours after death, this lividity left by the cord, formerly regarded as a sure test of death by hanging is by no means reliable. And so

turgescence and lividity of the face and the other post mortem appearances already described may be present in death from other causes. In those cases, which are rare, where much injury has been done to the neck, and where the muscles are found lacerated, the cartilages broken, and the ligaments torn, while blood is extensively effused in the soft parts and in the spinal canal, there is no probability that these injuries were produced after death; but without the infiltration this sign is not very valuable.

Dr. Hutchinson is quoted by Dr. Reese as saying that an invariable sign of death from hanging is the flow of saliva out of the mouth, down the chin, and straight down the chest, the secretion of saliva being a living act.⁴

§ 125. Suicide or homicide.—After the examiner has satisfactorily demonstrated that death was the result of hanging, the investigation as to whether it was suicidal or homicidal must start with the presumption that it was suicidal, as this is such a common mode of committing suicide and such an uncommon mode of committing murder. In a case of homicidal hanging, tried in Paris, the facts brought out on the trial, made up mainly from the confessions of the man and woman, each of whom tried to throw the entire crime on the other, showed that a notary named Gouffe was induced by the woman to accompany her to her rooms, and while she was sitting in his lap, she assisted her accomplice to slip a noose over his head and he was immediately drawn up to the ceiling and held there until dead.

Medical testimony, of course, cannot determine whether the act was suicidal or homicidal, but only afford a probability. As, for instance, if poison is found in the stomach or great injuries found on the body, the physician may be called to testify if these would prove immediately fatal or if thereafter the deceased would have time and strength enough to hang himself. The chief facts on which a physician must base his opinion are the position of the body, the marks of violence, both external and internal, and finally both of these elements in connection with the ordinary signs of hanging. While these signs are

⁴ Reese Med. Jur., p. 155.

not uniform or constant and sometimes not at all helpful, yet they give data which can be relied on, and the most important are the local lesions on the neck. In considering these remember that they will differ according to the length of the suspension, kind of cord, weight of body, length of drop and kind of knot.

Complete suspension of the body is by no means necessary to produce death; indeed, in suicide cases it very rarely happens. In many cases the body is found with the feet resting on the ground, in others kneeling, extended and lying, sitting and squatting. From actual experiment it has been demonstrated that in constriction of the throat consciousness and sensation are soon lost or give way to an indescribable degree of pleasure. Hence the will power is lost and no attempt is made towards rescue, although the means are at hand. Hence the position in which the body is found is neither a safe criterion of its position at the moment of death, nor an index of the voluntary or involuntary character of the act. The cord in many cases slips or stretches by the weight of the body or the momentum of the fall, so that the body will occupy a lower position than at the moment unconsciousness was produced. To find the hands and feet tied does not indicate that the death was homicidal, although care should be taken to observe whether the ligatures on the wrists are tied in such a manner as could have been done by the person himself.⁵ There are records of cases where suicides have attempted their lives by knife wounds, pistol shots and poison before hanging, and in one case at least the suicide left a note indicating that it was a case of murder. Where there are found fractures of the hyoid bone, of the cartilages of the larynx or laceration of their intervening membranes and ligaments, or fractures and displacement of the vertebrae, and rupture of their ligamentous bands and intervertebral substance, it is fair to assume that these injuries required such a degree of violence as to preclude the idea of suicide. And yet some of these injuries have been found upon executed criminals, where the fall was great and the body at the moment of execution was violently rotated; and at least two cases of suicide are reported

⁵ 2 Wh. & St. (part 2), § 934.

where the cervical vertebrae were injured. While other marks of violence found upon the person of the hanged would naturally give rise to the suspicion of homicide, a remarkable case of suicide attended with such appearances is reported as occurring in the prison at Sigmaringen, Germany. One of the prisoners, who a few hours before had been left by the turnkey in his cell, was found hanging by his cravat to the door jamb; on his head were five contused and lacerated wounds; the right ear was lacerated, a portion of the head and face covered with blood, and his handkerchief stuffed in his mouth. On the sharp edges of the window sill, which was only two feet from the floor, traces of dried blood and hair were found, and on the wall below the window there were several lines of dried blood running towards the floor. Had this occurred elsewhere than in a locked prison cell, the theory of homicide would have been hard to disprove.⁶

As to all these matters the examiner should only arrive at conclusions after careful investigation of all the facts, medical and otherwise, bearing always in mind that hanging is pre-eminently a suicidal act; and strong evidence, both medical and other, will be required to overcome this presumption, in any given case, it being far more likely that a person would inflict barbarous injuries on himself or take poison, and then hang himself, than that a murderer should resort to so difficult and unusual a mode of assassination.

§ 126. Death by drowning.—Drowning is that special form of death by suffocation in which the breathing is arrested by water or some other liquid, such as privy soil, mud or cesspool liquid, and even more effectually than by a ligature drawn around the neck. It is not necessary that the whole body should be submerged to cause death by drowning. This may be accomplished by merely immersing the face, so as to keep the nose and mouth under the liquid, as is seen in cases of young children, epileptics and drunkards, who have fallen into shallow pools on their faces and been drowned because unable to extricate themselves. It is also said a man may be drowned by submersion in flour.

⁶ 2 Wh. & St. (part 2), § 941.

In addition to the usual cause of death by asphyxia, the deprivation of air, there is superadded the physical impediment of the introduction of water into the minute air tubes and vesicles of the lungs by aspiration, in the violent efforts of the person to breathe. This was shown by experiments in London upon two dogs. Both were completely submerged in water at the same time, but one had his wind pipe plugged. At two minutes they were taken out, and the one with the wind pipe plugged recovered immediately upon the plug being removed, but the other died. Dogs with their windpipes plugged have recovered after being submerged four minutes. Upon examination, their lungs were found congested, but where the wind pipe was not plugged, the lungs, beside being congested, exhibited in their bronchial tubes and air vesicles a bloody, frothy mucus, which completely filled them and formed a perfect impediment to the ingress or egress of air.⁷

A person who falls alive into the water and is unable to swim, sinks at once below the surface; immediately the impossibility of breathing forces him to struggle to reach the air, and the effort to breathe is instinctively repressed until this is accomplished, when he gasps convulsively, and takes in with the air a quantity of water, which is unavoidably swallowed; he sinks again, and if he has strength to reach the surface again, the death struggle is prolonged; but the deprivation of air soon numbs both his mental and physical faculties and he sinks to rise no more and life is probably extinct in four or five minutes.

Those who have had opportunities to observe, say that pearl and sponge divers never remain under water to exceed two minutes; even professional swimmers have never been known to remain under water as long as five minutes. If a person in a state of syncope falls into the water he may survive longer, as was shown in the case of the woman condemned to be drowned for infanticide, who fainted at the moment she was thrown into the water and revived after being taken out of the water, where she had remained fifteen minutes.⁸

⁷ Reese Med. Jur., p. 156.

⁸ 2 Wh. & St. (part 2), § 944.

§ 127. Length of time before body rises.—The time at which a drowned body will float or rise again to the surface varies with the temperature of the air and the water; the age, sex and corpulence of the person, and is also dependent on whether clothed or not. It rises sooner in summer than winter, in salt water than in fresh; very fat bodies sooner than lean, and women than men. To determine the time that has elapsed since the act of drowning, when the body is discovered in the water is not always possible, and after putrefaction has set in it is mere guess work.

It depends to a large extent upon so many circumstances and conditions that no specific rules can be laid down for the determination of this question, and the examiner should use great caution in fixing a time from the mere appearance of the body, in the absence of any other information. This question may give rise to legal complications, as where a suit was brought on a life insurance policy, it being claimed that the assured was drowned and his body found floating in the water four days afterward. The insurance company introduced medical experts to prove this impossible, but other medical experts testified that it might occur, and the company had to pay.⁹

Even after resuscitation from drowning, death frequently takes place within a few hours or days, from secondary causes, such as exhaustion, obstruction to respiration from the condition of the lungs, convulsions and spasms of the epiglottis.

§ 128. External appearance.—If an examination of a drowned body is made soon after the drowning, and before putrefaction has set in, the face and body will be found pale, but very soon becomes livid; and the face without swelling becomes a brick color on exposure to the air, especially in warm weather; the countenance natural and composed, eyes half open, eyelids livid and pupils dilated; the mouth half closed or open, the tongue swollen and congested, often indented by the teeth and perhaps lacerated. These appearances do not belong exclusively to death by drowning; they indicate the probability of death by

⁹ 2 Wh. & St. (part 2), § 945.

suffocation. The skin will be cold and pale, which indicates merely that the body has been in a colder medium than the air, and the cutis anserina, or goose flesh, will be observed, which cannot be produced on a body already dead unless it is thrown into the water while yet warm, and is especially significant. There will be abrasion of the hands; mud and sand under the nails and substances grasped in the hands, indicating that in the struggle to reach the air, the deceased clutched at whatever was within reach; this is especially true where they are held with a death grip. Unless the substances found in the hands are such as are peculiar to the water, the other marks of injury upon them may indicate a struggle on the bank, a fall down a steep bank, or may have been produced by striking on some substance at the bottom of the water. These signs may not be found at all, by reason of the absence of all struggling or on account of the depth of the water, or if found may be caused by the instruments used to grapple the body, or by fishes. After several days' immersion the palms of the hands and soles of the feet become white, thickened and sodden, the result of absorption, which condition is later found on the knees and elbows. A dead body left in the water would present the same appearance.

If putrefaction has commenced before the body is removed from the water the face will have assumed a reddish or bluish color.

§ 129. Internal appearance.—Besides the usual indications of death from asphyxia, if the examination is made soon after the drowning, the lungs are distended, red or purple in color, overlapping the heart, and are in a flabby condition, because water is taken in by aspiration during the struggles, penetrating even the air vesicles and rendering them sodden and doughy; when cut into, the lungs exude a bloody mucus froth. The presence of this froth in the smaller tubes and air cells, especially at the mouth and nostrils, together with the sodden condition of the lungs, is regarded by some as one of the most positive signs of death by drowning, and is not seen after putrefaction. While water may penetrate the lungs after death, as has been

demonstrated, if the water found is identical with the water in which the body is found and contains mud, sand, etc., the presumption is that it was drawn there during life. The absence of water or froth from the lungs does not prove that the death was not caused by drowning. The presence of frothy foam in the larynx, trachea and bronchi is now regarded as an almost positive proof that the drowned person was alive when entering the water. It is considered sure proof of vital action, spasmodic attempts to breathe and cannot be produced in a dead body. This disappears, however, quite speedily, sooner in summer than in winter, and appears sooner in winter than in summer. Another important indication of death by drowning is the presence of water in the stomach, especially if this corresponds with the water in which the body is found, and along with it there is found in the stomach fragments of weeds, sand, etc., corresponding with the substances in the water where the drowning occurred. This was at one time regarded as absolute proof of death by drowning, for the reason that it was impossible for water to enter the stomach after death. But this has been proven to be a fallacy, and yet because it takes a long time for water to enter the stomach after death, the finding it there soon after submersion may still be regarded valuable evidence, but the longer the body has been in the water the less valuable it becomes.

The condition of the heart in such cases indicates nothing as to the cause of death other than asphyxia. In the majority of cases the right cavities are full and the left empty, as in asphyxia generally, but sometimes both sides are equally full. The brain exhibits no characteristic post mortem sign. There may be some general fullness of the vessels, but never extravasation of blood, unless a sudden apoplexy had supervened, as when a person plunges suddenly into cold water after eating heartily, or strikes the head against a hard body in diving. The condition of the brain may be due, also, to intoxication, excitement or the struggle in the water. The blood is usually dark and fluid, but has been found coagulated; the abdominal organs are usually found much congested, especially the liver and kidneys. One authority (Lacassaque) claims that the watery engorgement of the liver is sure proof of death by drowning; the mucous

lining of the stomach is usually congested, and if drowning occurred during the process of digestion, or if the body has been long in the water, is of a violet color, suggesting irritant poisoning; the bladder may or may not contain urine, and Caspar says that retraction of the penis is a sign peculiar to death by drowning. If marks of violence are found on a drowned body, the question there to be determined is, whether the person was really drowned. This is because persons are frequently murdered and then thrown into the water to conceal the method of death: and suicides often inflict severe injuries on themselves before drowning.

Devergie asserts, and in this he is supported by Casper, that he could tell in nine cases out of ten whether a body went into the water alive or dead, but other authorities do not assert this so positively.

Of course, if it is apparent from the absence of signs of drowning, that the person was dead when thrown in the water, it will be natural to presume that the wounds were not accidental. A person may receive fatal or other injuries by falling or jumping into the water, as did a man who jumped from the parapet of London bridge and dislocated both arms; sometimes bruises are received by coming in contact with substances under the water, or with grappling instruments, and a collar or fastening of a dress may cause a mark on the neck suggesting strangulation. Capt. Matthew Webb, who attempted to swim the whirlpool rapids at Niagara Falls and was taken from the water dead, was not believed to have been drowned, but to have been killed by the force of the water beating against him.

It is for the examiner to determine whether these injuries were accidental or not. If the injuries are stabs or gunshot wounds, they must be either self inflicted or homicidal, and can in no way be connected with the drowning; but after a body has lain a long time in the water the distinctive marks of these injuries may be destroyed.

The presence of ligatures upon the hands and feet, with weights attached to the body, show the drowning was not accidental, but by no means proves homicide; too many cases of suicide with such attendant circumstances are known to raise

such a presumption; but an examination of the knots, etc., should show whether or not it was possible for the deceased to so bind himself. Statistics abundantly show that homicidal drowning is very rare.

§ 130. Resuscitation.—While rules to govern in the resuscitation of the drowned are not particularly within the province of medico-legal jurists, yet as a matter of importance to everybody, the following are concise and very valuable. It must be borne in mind that what these efforts at resuscitation seek to accomplish, is to restore the animal heat, stimulate the heart action, bring about natural by artificial respiration, excite the nervous centers and combat the tendency to death which might naturally result from the submersion in the water, giving rise to the secondary causes, such as exhaustion, obstruction to respiration, convulsions, or spasm of the epiglottis.

The restoration of the drowned depends chiefly on exciting artificial respiration. The clothes should be immediately removed, and the body quickly wiped dry and wrapped in a blanket; the mouth and nostrils cleared of mucus and water; the tongue drawn forward; the body placed with the face downward, the forehead resting on one arm, for a few moments, to allow the fluids to run out of the mouth; ammonia applied cautiously to the nose. If respiration is not restored, place the body on the bank, with the head raised, and adopt Sylvester's process of artificial respiration, by carrying the arms gently outward and upward above the head, for a few seconds; this movement expands the chest. Then lower the arms, and bring them to the sides of the chest. By this action expiration is effected. These alternate movements should be made each about every two seconds. All rough handling, such as the absurd, vulgar plan of rolling on a barrel, should be avoided. As soon as any signs of respiration are manifested, warmth should be applied to the skin by a warm bath, or stimulating friction. When able to swallow, the patient may take a little warm spirit and water and then be put to bed and allowed to sleep. This treatment

has generally been rewarded with success, although it sometimes requires hours of persistent effort.¹⁰

§ 131. Blood stains.^{10*}—The examination of the blood stains may be important in very many cases and is frequently necessary in medico-legal investigations. To illustrate: An examiner may be called upon to testify as to the effect of poisons on the blood; on why hemorrhage causes death, and how proven; how human blood is distinguished from that of other animals, and what is the effect of time on blood stains.

The identification of blood stains very frequently constitutes a most important link in the chain of evidence in a trial for homicide. Generally a murderer, when asked to explain, attributes the suspicious red stains discovered upon his garments, or implements, to the blood of some domestic animal or bird. Within a few years past the resources of science have afforded material aid in distinguishing human blood stains from those of the inferior animals, so that the medico-legist may now feel much more confident in delivering his testimony on this subject in a trial for homicide, than he could have done in former years.

The appearance of blood stains to the naked eye will vary in size, shape and color. Sometimes the stain may appear to be a mere film or smear, but generally it presents the form of distinct spots of different sizes; and if the blood has spurted obliquely upon a surface, the spots will have assumed a comet-like shape, terminating in a bulbous tail.

Experience, however, has shown that it is possible for a murder to be committed even by repeated blows and with an instrument like a hatchet without any blood found on the murderer. The medico-legist can only say that in such a case blood stains may be expected but there may be none.

The distinction of arterial from venous blood, except when recently effused, is manifestly impracticable. Their chemical reactions are very nearly alike, and the only ground of distinction is in the more florid color of the former when recently

¹⁰ Reese Med. Jur., p. 164.

^{10*} See also *ante*, § 105.

poured out, and occasionally also in the form of the spots, those made by arterial blood being generally of an oval or elongated shape, in consequence of the blood having been thrown in a jet from the divided vessel. Careful observation of the shape of a blood stain may not only enable the examiner to determine whether it came from a spurting jet of blood but also the direction from which it came, being broader nearest its source and gradually thinning down to a point. This may enable him to determine in a measure the relative position of the victim and his assailant. Moreover, in practice the two kinds of blood will almost always be mingled together, as it is difficult to conceive a wound being made which will not involve both kinds of vessels.

The *color* of the stain will depend (1) upon its freshness; if recent, it will have a bright red hue; if old, the color will be brownish or brown red: this, however, may depend on the temperature, as in warm weather the change from red to brown is very rapid. So, also, the time within which blood will dry is subject to the same conditions. (2) Upon its thickness; being darker in proportion to the density of the stain. (3) Upon the material on which it has fallen; if the latter is porous, as soft wood or linen or cotton fabrics or a light surface or fabric, the tint will be dull and pale, but if on polished and hard substances, such as metals or polished wood, the spots have a darker and shining appearance; and on drying they are likely to crack from the center, and may thus be easily removed. When dried upon linen or cotton, they usually have a stiffened feeling, like a spot of dried albumen or gum. If the stains are upon a colored substance, such as the dark green cloth of a carriage cushion, they can best be distinguished by artificial light: indeed, they may be entirely invisible in bright daylight. This important fact was discovered by Ollivier d'Angers. He had been directed to re-examine the room of a person accused of murder; having already visited it in the daytime, his second examination was conducted at night, and he now discovered by holding a lighted candle near to the paper hangings, which were of a pale blue color, a number of drops of an obscure dirty red, which by day had the aspect of small black specks, and were lost in the

general pattern of the paper. On further examination other spots of the same kind were found on the furniture. On the chimney jamb, which was painted blue, there was a large stain of blood which appeared red by the light of the candle. The next day, by daylight, he could not discover these spots, and was obliged to make use of artificial light to discover them.¹¹

Fibrin in a blood stain is merely corroborative proof of the origin of the spot, but does not indicate with any certainty that the stain was derived from the blood of a living person; nor, on the other hand, does its absence determine that it was derived from a body already dead; because if the stain be thin, it may yield no traces of fibrin, even though it came from a living person, and coagulation does not become complete immediately after death. Hence if the examiner be able clearly to discover blood by the reactions of the colored serum, it is unnecessary to search for fibrin; and, on the other hand, this element of the blood could hardly be detected without ample proof in other ways of the nature of the fluid, as such a large quantity of blood would be needed for the purpose of detecting it.

§ 132. *Examination of blood stains.*—Medico-legists possess four principal methods of examining blood stains, and in this examination there are two questions to be determined, viz.: 1. Is this the blood of an animal? 2. Is it the blood of a human or of a lower animal? The methods of examination are, (1) the chemical; (2) the microscopic; (3) the spectroscopic or optical; (4) the biological. By the chemical and spectroscopic tests we are enabled to say whether the stain is blood, and by the microscopical and bacteriological tests, probably, whether it is human blood or not. In the present state of the science it is not safe to claim more than this. But before employing either of these methods the suspected spot should be carefully examined with a good magnifier; the spot, if a blood stain, will frequently exhibit minute coagula or clots of a shiny hue, intermixed with fibres of the material on which it is found.

1. *The chemical tests.* It has been conclusively shown that

¹¹ 2 Wh. & St. (part 2), § 725.

the coloring matter of blood, when quite recent (when it is called haemoglobin or oxy-haemoglobin), is very soluble in cold water, but when old, so as to have changed to a brown color, it is converted into haematin or deoxized haemoglobin, which is insoluble in cold water. This is a very important fact to bear in mind, for if a garment or other article stained with blood is immediately washed in cold water no trace of the blood will be left. But if the garment is kept for some time before washing, and this very frequently happens, the soluble haemoglobin will have become more or less connected with the insoluble haematin, so that enough of the blood will remain to suffice for identification. Hot water will not so effectually remove a recent blood stain. If a blood stain is recent, the examiner should cut out a small piece of the stained fabric and suspend it in a test tube of cold distilled water. In a few minutes the coloring matter will be precipitated to the bottom, forming a bright red solution. With an older stain more time will be required to effect the solution, and this will have a brown hue. If the stain is very old no solution will be obtained. If the stain is upon a porous substance it should be cut or scraped out, reduced to powder, soaked in cold water for several hours and then filtered. If the spot is on a hard metallic substance it should be carefully dried, when it will be very likely to crack off; otherwise it may be scraped off with a knife, soaked for some time in cold water and filtered. If the solution should not be complete, a little dilute ammonia or a trace of citric acid may be used to effect the solution. Having procured a clear, red solution, heat this in a test tube over a spirit lamp, and four results will be obtained: (1) the red color disappears; (2) coagulation takes place; (3) a brownish green precipitate will be formed. If there is enough of this precipitate it may be collected, dried and heated with a weak ammonia solution, which will dissolve it. This solution will appear dark green by reflected, and red by transmitted light. (4) A *weak solution of ammonia* added to it, either produces no change of color or merely intensifies it. In this way it may be distinguished from cochineal or red fluid colors, which would be changed to a green or crimson color. Tincture of galls gives a red precipitate to the original solution, and a solution of

chlorine causes no change whatever. Other red solutions, such as cochineal, kino madder, logwood and red fruit juices, do not coagulate by heat and all are changed in color by the addition of ammonia. The test of the tincture of galls or tannin applied to the stains of orange or lemon juice on the blade of a knife will detect the difference between them and blood stains. So the stain of red paint (which contains iron) and iron mould is easily detected by its solubility in dilute muriatic acid, and by testing for iron. Rust is not soluble in water.

To remove a blood stain from a knife, if the metal is heated, the blood peals off, which rust will not do. If the metal on which is the blood stain has been exposed to the air for some time so that rust is mixed with the blood, this test will be valueless. On the addition of nitric acid, to a watery solution of blood, a whitish gray precipitate is formed.

The guaiacum test constitutes a beautiful and satisfactory portion of the chemical test for blood, and is as follows: A freshly prepared tincture is added to water. Only a few drops are needed for a small quantity of water; this will precipitate the resin. Divide the water suspending the resin into two portions, and into one of them pour a little solution of red coloring matter of blood, and into the other a few drops of peroxide of hydrogen dissolved in ether (ozonized ether); no change of color will be observed in either portion. Now to the first portion add a few drops of the ether, and to the second a few drops of red solution, and a sapphire blue color will soon be seen. In case the solution is turbid by reason of the presence of too much resin, a few drops of alcohol will clear it and bring out the bright blue color. If the simple addition of the blood solution to the guaiac produces a blue color, the examiner may be certain that some oxidizing substance is present besides blood and conceals its presence. The value of this experiment consists in the fact that the blood of itself will not blue guaiacum, but in the presence of ozonized ether the blue color is speedily produced. Other substances may produce a blue color in the presence of guaiac and ozonized ether, but with some of them there would be no mistaking them for blood, and with others a long time is required to produce the result, while with blood the

effect is immediate. This test is as good for old as fresh blood, for concentrated or diluted blood; and therefore may be used wherever a particle of red coloring matter remains. If no bluing occurs in the presence of the guaiac and the peroxide the examiner may safely conclude that the spot does not contain blood. If the blood stain is old or there isn't enough to furnish a sufficient solution, or where there is some doubt of its presence on a colored material, it will be a good plan to moisten the spot with a few drops of water, then with the guaiac tincture and the ozonic ether, and then press upon it white tissue or filtering paper. If there is any blood present the characteristic blue stain will appear. By adding a little more of the guaiac and the ozonic ether a number of such impressions will appear on the paper. The chemical tests will not distinguish arterial from venous blood, nor human blood from that of the lower animals. Nor can menstrual blood be distinguished from human blood that has flowed from a wound. So that the chemical test is only important for determining whether or not a spot contains blood.

II. *The Microscopic Tests.* These consist in the identification of the blood corpuscles (especially the *red* ones) by the aid of the microscope. The stain, if not too old, should be cut out and placed on a slide or a watch crystal, and moistened with a few drops of cold water mixed with one-seventh part of glycerine, or with a small quantity of common salt, or sulphate of sodium: a glass rod being pressed against it to cause a separation. Then the specimen should be covered with a thin glass, and examined with a one-fourth-inch power and the corpuscles measured with a micrometer. If the stain has been washed, the result will probably not prove very satisfactory, but the discovery of a single red corpuscle will prove the presence of blood. The white corpuscles, which are fewer in number, may sometimes be distinguished where the red disks cannot be detected. If many of these white corpuscles are found, it would indicate disease, or pus, rather than blood. If there is only a minute speck scraped from a weapon or taken from a garment, it may be laid upon a glass which has been breathed on two or three times, then covered with the slide and examined. The breathing upon the glass

serves to break up the clot without destroying the corpuscles by too much dilution. The human blood corpuscle is a round bi-concave disk, without a nucleus. All mammalian corpuscles have the same form, except those of the camel tribe, which are oval. The corpuscles of birds, reptiles and fishes are oval, larger in size, and nucleated. Oval corpuscles may become globular by treatment with an excess of water. The outlines of dried blood corpuscles are irregular and jagged and more or less stellate. The maximum diameter of the human blood corpuscle, according to Gulliver, is 1-2000 of an inch, the minimum 1-4000 of an inch, and they will average about 1-3200 of an inch. According to Taylor the average is about 1-3500 of an inch, and this size is not affected by age, being the same in the young and the old.

The guinea pig, musk-rat, seal, beaver, opossum and capybara, or water hog, of South America, are the animals whose blood corpuscles are virtually the same in size as those of man, while those of certain other animals are slightly larger, and those of the horse, cow, pig, sheep and goat are notably smaller.

The important medico-legal question in this connection is whether it is possible to distinguish human blood from that of the lower animals. Of course there can be no difficulty in recognizing this difference in the case of birds, reptiles and fishes, as the shape and size of the corpuscles and the presence of a nucleus will at once make it manifest. But as regards the blood of the common domestic animals, such as the cow, horse, pig and goat, it becomes a question of great difficulty and one which it was supposed could not be solved. The importance of being able to make the distinction will appear when it is considered that a blood stained garment may or may not prove to be an important item of evidence in a homicide case, depending upon the character of the blood with which it is stained. And there never was a homicide case in which blood was found upon the clothes of the accused that its presence was not accounted for as coming from some of the lower animals.

Prof. J. G. Richardson, of Philadelphia, has demonstrated that by employing very high microscopic powers, such as the 1-50 of an inch objective, magnifying with a micrometer eye piece

over 3,000 diameters, the human corpuscle appears about 9-8 of an inch in diameter, while those of the ox and sheep are about 5-8 of an inch in diameter, showing a very obvious difference in their respective sizes. But this difference cannot be discovered by the use of ordinary powers, say 500 or 600 diameters. It remains for science to discover a means by which the distinction, if there is any, between human blood corpuscles and those of the guinea pig, musk rat, seal, beaver, opossum and capybara, can be demonstrated; but, judging the future by the past, we may hope that even this will be found. Dr. Cyrus Edson, of New York, has made use of the following process, which he claims will enable the investigator to determine conclusively whether the substance is human blood or not. "He first measured 3,000 corpuscles of each kind of blood which seemed most likely to be brought in question in murder trials. Then, by means of the camera lucida (which is an instrument which, by means of a prism of a peculiar form or arrangement of mirrors, gives by reflection a picture which may be thrown down on paper so as to be conveniently traced) attachment to his microscope, he cast the image of an average corpuscle of each variety on to a sheet of white paper, from which, with infinite care, he cut a disk exactly corresponding to it in size, but enlarged by means of compasses. He saw to it that his focus was absolutely the same while he carried on this work, and he knew when he had this finished that he had six disks of paper which bore exactly the same relation to each other in point of size that the blood corpuscles did to each other. He then took these disks of paper, pasted them on glass and used them as a lantern slide. This enabled him to throw them on a screen magnified as many times as he choose. It would have been simple for him, had he so desired, to arrange an apparatus by which he could have made the smallest of them as large as the side of his study. He was contented, however, with magnifying them until the largest one measured about two feet across. It was then possible for him to take a foot rule and measure the black spots on his screen with a certainty that the differences in size could not be affected by any small extraneous influence. This method of cutting paper disks he selected as

the most desirable, although at first it seemed that photography afforded the best means of accomplishing his ends. The adjustment of the photographic focus, however, is so delicate a matter that he soon realized that this would add to the possibilities of inaccuracy and, therefore, abandoned it."

Under ordinary circumstances there is no difficulty in determining whether a given stain is, or is not, a blood stain; and, in case the blood corpuscles are intact, the blood of reptiles or birds is readily distinguished from that of mammals. But even under the most favorable conditions the determination of the particular mammal from which a sample of blood has been obtained, is a matter of great difficulty, calling for expert skill and very careful microscopical examination. Even the most expert would hesitate to testify to the presence of human blood, in distinction from dog's blood, for example, when such testimony would mean the conviction of one accused of murder.

There are certain bodies, such as starch granules, the sporules of fungi, and the disks of coniferous woods, which are liable to be mistaken under the microscope for blood corpuscles, but as they generally possess certain special marks by which they can be recognized, they will not be likely to be confounded with blood corpuscles by a practiced microscopist.

Blood crystals, which can be obtained from all kinds of red blood, being in fact due to the crystallization of the haemoglobin, constitute another test for blood. To procure them, evaporate a drop of blood to dryness on a piece of glass, add a drop of distilled water, and cover the whole with a slip of thin glass. When the water has nearly evaporated, microscopic crystals of various forms and sizes are visible. Those of man are prismatic or rhomboidal; those of the inferior animals are either similar in shape or else tetrahedral or hexagonal.¹² But the similarity of human blood crystals to those of lower animals is too great to enable the examiner to determine with any degree of accuracy their real origin, and hence, except for the purpose of determining whether or not the spot contains blood, this test is of no practical benefit.

¹² Reese Med. Jur., p. 130.

Professor Wormeley sums up the whole matter in these words: "The microscope may enable us to determine with great certainty that a blood stain is *not* that of a certain animal and is *consistent* with the blood of man; but in no instance does it, in itself, enable us to say that the blood is really human, or indicate from what particular species of animal it was derived."¹³

III. The Optical or Spectroscopic Test. The use of the spectroscope in the examination for blood spots depends upon the fact that various colored solutions possess the power of absorbing different portions of the spectrum, and of producing therein certain dark lines, as certain vapors and gases affect the spectrum. Blood, in this respect produces a very marked effect, causing absorption bands (dark lines), which clearly demonstrate its presence, even in minute quantities. When the coloring matter in perfectly fresh arterial blood (haemoglobin) is examined by the spectroscope, it will produce *two* absorption bands in the spectrum, the lower twice as broad as the upper in the yellower half of the green space; and the blue end is darkened. When haemoglobin is acted upon by acids and alkalies, or kept for a long time, especially in a damp place, it acquires a brown color, becomes deoxidized, and is finally changed into haematin. The spectrum of deoxidized haemoglobin, or of venous blood, shows a single broad absorption band, visible in the green; the blue end is also darkened. After a short exposure to the air it becomes reoxidized and gives a spectrum with the blue end darkened, the two bands of oxidized haemoglobin much weakened, with a third band visible in the red. The spectrum of deoxidized haematin, or of blood after a long exposure to the air, shows the blue end darkened, and two well defined bands in the green, but stronger than in the spectrum of haemoglobin, and the band in red disappears. To make this examination the blood solution should be prepared as for the chemical tests, and the best apparatus to use is a combination of the microscope and spectroscope. Of course, in pronouncing upon the value of this test for blood we are met by the inquiry whether other substances will not give spectra similar to blood. The highest authorities upon this subject say that nothing gives a spectrum

¹³ Micro Chemistry, p. 736.

exactly similar to that produced by oxy haemoglobin, although there are bodies which produce absorption lines somewhat similar, but not so like as to mislead a practiced observer. Thus, the coloring matter of the petals of Cineraria give two absorption bands, but the action of ammonia upon them makes the difference easily perceptible. Cochineal, madder and other red dyes, dissolved in alum, although producing bands somewhat resembling those produced by blood, may be distinguished therefrom by the use of ammonia and potassic sulphite.

These bands, however, do not occupy the same position in the spectrum, and they are not capable of reduction and reoxidation as is the coloring matter of blood. The reduction test is as follows: Add to the oxidized haemoglobin, sodium or ammonium sulphide, or a solution of protosulphate of iron (to which tartaric acid has been added to prevent precipitation by alkalies), and the two distinctive bands in the spectrum will disappear and be replaced by one band, dark in the middle, the edges washed out and occupying what was the green space between the two bands of oxidized haemoglobin. Upon shaking the solution in the air it again becomes reoxidized, and presents the spectrum with two lines as before. The reduction test should always be applied in order to determine with certainty the presence of blood.

While the spectroscope, for the purpose of distinguishing human blood from that of the lower animals, is inferior to the microscope, yet in the hands of a skilled operator it affords the most certain and delicate test known for detecting the presence of blood.

IV. The Biological Test. Certain scientific discoveries have put us in possession of knowledge which is already beginning to be used in legal practice, and which bids fair to be of great value in all cases where the identity of blood or blood stains is of importance.

After standing a short time the blood drawn from an animal clots, the clot soon contracts and squeezes out a fluid, clear and pale yellow in color. This fluid is called blood serum. If the blood or the blood serum of any animal, viz., a sheep, is injected into the peritoneal cavity or the veins of a rabbit, the blood of that rabbit acquires, after a few days, a remarkable power. The

serum of this rabbit's blood comes to contain a so-called *precipitin* by virtue of which, when mixed with the serum obtained from sheep's blood, forms therewith a precipitate, at first like a cloud, but soon settling out as a flocculent mass; this material, separating from the mixed sera, is called the *precipitum*. Moreover, this *precipitin* is specific for sheep's blood, and will give a *precipitum* with the blood from no other species of animal. Applying this to man, it was found that if small amounts of human blood are injected into a rabbit the blood of that rabbit will contain in a few days a *precipitin* which is specific for human blood, and will give a *precipitum* with the serum of no other animal. The serum containing a *precipitin*, which will react with a certain kind of blood, is called an anti-serum for that species; thus, we have anti-ox serum, anti-sheep serum, anti-human serum, etc.

The value of this *precipitin* test in distinguishing human blood, or blood stains, is at once apparent. Careful experimentation has shown that watery extracts from old stains act precisely the same as the serum from fresh blood of the same species. The age seems to make no difference with the reaction; blood stains on various objects in the collection at Scotland Yard, some of them thirty years old, gave positive tests with human anti-serum, showing thereby that they were human blood stains. There are only a few animals whose blood is at all likely to be confused with that of man; these animals all belong to the monkey family, and confusion with them in this country is very improbable. Stains on metals, cloths, almost all kinds of leathers, and earth, are readily identified. Certain chemical agents and high temperatures act on blood in such a way that this test can not be applied, and under any circumstances the examination must be conducted with adequate precautions and by one skilled in the technique of the test.

Uhlenhuth made a number of rigid examinations of materials furnished him by the German public prosecutors, and in every case he was able to correctly establish the presence or absence of human blood. In some instances, where the blood was not that of man, he was able to say from what animal it had been obtained. The test has been used in legal practice in a number of European countries, and a few times in this country.

CHAPTER XIV.

SIGNS AND PROOFS OF DEATH.

§ 133. Molecular and corporeal death.	§ 137. Cadaveric lividity — Internal suggillations.
134. Post mortem signs of death.	138. Putrefaction—Adipocere—Mummification.
135. Time since death.	139. Proofs of death.
136. Rigor mortis.	

§ 133. Molecular and corporeal death.—By molecular death is to be understood the final condition in the process of death. During life the incessant disintegration of tissue is going on, the waste of material being compensated by the never-ending work of reparation. In youth the supply is in excess of the waste, and we have growth. In advanced age we find just the reverse of this process. Death is the complete arrest of repair, and decay is universal. Corporeal or somatic death is the death of the whole body, and the time when this takes place is universally recognized. The precise period when universal molecular death occurs can not be definitely stated. It is certain that molecular life may continue after corporeal death, as is shown by the existence of post mortem caloricity and in the growth of hair and nails. The arrest of the functions of one or the other of the three great centers of life—the heart, the lungs, and the brain, is the immediate cause of corporeal death. And so dependent are they upon each other that when one ceases to act the actions of the other two are speedily stopped. The arrest of the functions of each of these three vital organs has its own special phenomena, and exhibits its own characteristic post mortem appearances.

1. When death commences in the brain there comes stupor more or less profound; insensibility to external impressions; loss of consciousness; the breathing is slow, stertorous and irregular, and respiration gradually ceases as the medulla ob-

longata begins to be affected. The chest ceases to expand; the blood is no longer aerated; the pulmonary circulation is arrested; the lungs cease to act, and finally the heart's pulsations stop. The post mortem reveals: 1. Embolism. 2. Concussion from a blow or fall. 3. Congestion of the vessels of the brain, caused by disease, narcotic poisons or some mineral poisons, as barium and arsenic. 4. Effusion of blood or serum in the brain or cavities, caused by apoplexy or rupture of vessels from injury to a fracture of the skull. 5. Abscess, tumor or other organic disturbance.

II. Respiration may be arrested in different ways—as by any mechanical impediment to the ingress of oxygen into the lungs, arising from pressure on the thorax; tetanic spasm of the muscles of respiration, as in tetanus and strychnine poison; paralysis of the pneumogastric or phrenic nerves; exhaustion of muscular power from debility or cold; foreign bodies in the air passages or compression of the throat, as in hanging or strangling; suffocation or drowning; and by such diseases as pneumonia, phthisis, etc., although strictly speaking most of these diseases produce death by mechanical interference with breathing, producing hemoptysis or pneumothorax. The symptoms are great difficulty of breathing, lividity of the face, loss of consciousness, vertigo and convulsions. The post mortem generally shows the right side of the heart and the whole venous system filled with dark blood; the left side and the arteries empty. Sometimes the right cavities of the heart are found empty. Generally, but not always, the lungs are gorged with dark blood.

III. Anything which interrupts the continuous flow of blood through the system will result in death, more or less sudden. This interruption may come from causes within the heart, from functional disorders of the heart, or from a combination of the two. The heart may cease to act from two distinct causes: (1) From a deficiency in the quantity of blood, its normal stimulant, (anaemia); and, (2) from a defect in the quality of the blood or from a loss of heart power, (asthenia). Anaemia is produced by sudden loss of blood, and may be due to disease, as in rupture of an aneurism, uterine or other hemorrhage,

sudden discharges, etc.; violence, as from wounds of the heart and large vessels, causing fatal hemorrhage.

The symptoms of anaemia are a death like paleness of the face, vertigo, dimness of vision, cold sweat, lividity of lips, ringing in the ears, slow, weak and fluttering pulse and gradual insensibility. Nausea and vomiting, delirium, hallucinations, irregular breathing, and convulsions may precede death. A post mortem will show the heart contracted, and if seen soon after death it will be empty. If life has been protracted for some hours a heart clot may be found.

Asthenia is produced either by a defect in the quality of the blood, or by some disease of the heart producing a loss of heart power, such as cardiac disorders, phthisis, cholera, cancer, etc., or of starvation, or certain injuries, as blows upon the epigastrium; or such poisons as digitalis, prussic acid and upas.

The symptoms are coldness of hands and feet; lividity of lips, fingers, toes, nose and ears; extreme muscular weakness and feeble pulse. The senses and intellect are not affected. The post mortem shows the heart uncontracted, its cavities containing more or less blood or else dilated and flabby.

By bearing in mind these varieties of corporeal death and the post mortem characteristics of each, the examiner will be greatly aided in reaching a correct conclusion as to the real cause of death in any case to which he may be called to make a post mortem, or which has been under his care before death ensued.

§ 134. Post mortem signs of death.—In every inquest upon a dead body there are at least three important questions, and in certain cases four, to be answered by the examiner: 1. Is the person really dead? 2. What is the cause of death? 3. What time has elapsed since death? If the body is that of a new born infant, another question is to be answered: 4. Was it born alive? Other questions may arise, such as: What are the signs and proof of real death? Was the death suicidal, homicidal, or accidental? If two persons are found dead together, which died first?

The signs of death may be inconclusive or conclusive. The

following afford no means of establishing how long life has been extinct, and are, therefore, inconclusive: 1. Cessation of the circulation and respiration. 2. The state of the eye. 3. Absence of sense or motion (these, however, are found in cases of suspended animation). 4. The pinched nose, sunken eyes, hollow temples, ears cold and retracted, the skin of the forehead tense and dry, the complexion livid, the lips pendent, relaxed and cold, the whole presenting what is known as the facies Hippocratica; but this is frequently not seen in cases of sudden death, and may be observed in the dying as well as the dead. 5. The state of the skin. 6. Extinction of muscular irritability.

In some cases of apparent death the functions of circulation and respiration seem to be suspended for a time, as in catalepsy, etc., but such suspension is not absolute. The absence of a pulse at the wrist is no certain test of the entire suspension of these functions, as it may be beating so feebly as only to be discovered by a careful stethoscopic examination of the heart; and this examination ought always to be made in all doubtful cases. In cases of catalepsy, etc., the condition of the functions of respiration and circulation resembles that of hibernating animals during the period of hibernation. During this period the heartbeats of the animal may be reduced from eighty or ninety a minute to eight or nine. While there are some cases recorded of voluntary suspension of the heart's action, as such cases were seen before the discovery of auscultation, it is probable that the suspension was not absolute, but so reduced as to escape notice. It is certainly contrary to all scientific knowledge that life could continue many minutes without circulation of the blood; therefore there need be no doubt of the reality of the death when this function has certainly been arrested for as long a period as an hour. The converse of this proposition, however, is not always true; that is, the pulsation of the heart may continue for a brief space of time after actual death. The heart of a criminal has been known to beat one hour after execution by the guillotine, and the same thing has been observed regarding the heart of a turtle and a shark. So, also, the absolute and continuous cessation of breathing, say, for an hour, may be regarded as a sure sign of death. In cases of apparent death

this function may be reduced to its minimum of action, and thus apparently suspended; and this may be verified by careful and repeated auscultation. Dr. Cheyne says of Colonel Townshend, who claimed to be able to die and then come to life: "Two other physicians and I felt his pulse; it was distinct, though small and thready, and his heart had its usual beating. He composed himself on his back, and lay in a still position some time. While I held his right hand one of my companions laid his hand on his heart, and the other held a clean looking-glass to his mouth. I found the pulse sink gradually, till at last I could not feel any by the most exact and nice touch. Dr. Baynard could not feel the least motion of his heart or Mr. Skrim discern the least soil of breath on the bright mirror. Then each by turns examined his arm, heart and breath, but could not discover the least sign of life. This continued about half an hour. Believing him dead we were about to leave, when we observed motion of the body, and on examination found his pulse and heart motion gradually returning, and he began to breathe gently and speak softly."

Among the signs of death to be obtained by an examination of the eyes are the following:

1. Where death is but apparent, the cornea is translucent, the papilla of a rose red color, and the fundus of the eye red and furrowed by the arteries and veins of the retina.
2. After death the ophthalmoscope shows the transparent cornea wrinkled and like a piece of moistened window glass, which prevents seeing clearly the objects behind it.
3. The choroid loses its red color and becomes pale or gray like tarnished lead; it also acquires a pale tint like that of the papilla, so that the extremity of the optic nerve, being no longer made apparent by the red fundus, becomes almost invisible.
4. Although after death the papilla of the optic nerve, rosy red in life, can not be recognized by its color, still its place may be determined by the venous trunks which radiate from it as a common center.
5. As by death it loses its blood, the central artery of the retina disappears. The veins of the retina are contracted or disappear, and the blood arrested in their interior, presenting

more or less extensive interruptions due to beads of gas, and their course can not be easily distinguished.

6. The power of atropia and other similar poisons to expand the pupil, and of calabar bean to contract it, is lost, unless the test is made immediately after death, before the body has become cold and all muscular irritability has ceased.

7. The relaxation and sunken state of the cornea indicate death, and the change in the eyeball is very noticeable. As long as life lasts the eyeball remains elastic, and resists any pressure of the finger, but within twelve to eighteen hours after death this resistance ceases, and the ball becomes gradually softer and softer until decomposition sets in.

Usually after death the body becomes pallid and ashy in color, but this is not so with persons of florid complexions, and sometimes the cheeks retain their pink color for some time. Where death ensues from yellow fever or jaundice, this ashy pallor of the body will not be seen. It is important also to remember that the examiner will find a death-like pallor in cases of swooning, and sometimes in the cold stages of ague and in collapse, and that the red inflammatory spots around ulcers, tattoo marks, the spots of purpura, ecchymoses or bruises, do not disappear at death.

§ 135. Time since death.—The signs of death which have been spoken of afford no means of establishing how long life has been extinct, but the following do more or less certainly.

As the result of certain vital processes, so long as life remains the animal body possesses the faculty of maintaining its own normal temperature (about 98° F.) independently of the surrounding medium. As soon as death stops the vital machinery and circulation, respiration and nutrition cease, and the temperature of the body immediately begins to decline, and so continues but not uniformly until it attains that of the surrounding medium. While it never gets lower than the surrounding medium, unless that temperature is suddenly raised, the sense of touch does not convey an accurate idea of the actual coldness of a dead body, and the test with the thermometer is the only safe criterion.

The time required for the extinction of animal heat varies with the condition of the body at the time of death, the manner of death and the medium in which the body is kept after death, but a general rule is given by the different authorities as from eight to twenty-four hours after death.

Fat bodies retain warmth longer than lean. The bodies of persons killed by lightning or suffocated retain their heat a long time. A dead body thrown into the water will cool rapidly, while if hidden in a dung pile or vault of a water closet, or even covered up closely in bed, will cool very slowly. While the rate of cooling after death is progressive, it is not uniform, being much more rapid in the earlier hours after death than later. The interior of the body retains its heat much longer than the exterior, so that if an autopsy is held twenty-four hours after death, when the exterior feels perfectly cold, the abdominal viscera will show a temperature 20° or more higher than the surface. The value of this sign of death lies in the fact that it is progressive and continuous, while the coldness of disease is sudden and not permanent. Therefore, the degree of coldness of the body will often aid in determining the time which has elapsed since death.

Thus, on the trial of a man for murdering his wife by throwing her downstairs, he swore he saw her alive at a quarter before five o'clock. As the body was found cold and rigid at the foot of the stairs at nine o'clock, and the medical evidence established that it could not have become so in so short a time as four hours and a quarter, the man was convicted.

Where two bodies are found together observation of the temperature of the bodies is undoubtedly the safest way to determine which died first.

The bodies of persons who have died of yellow fever, cholera, tetanus, smallpox, and some other acute disorders, sometimes exhibit a rise of temperature after death instead of a fall—the increase amounting in one reported case to a post mortem temperature of 113° F. in the pericardium. The only explanation for this post mortem caloricity, as it is called, that has been attempted to be given, is that molecular life has continued after the cessation of somatic life, just as muscular irritability and

contractility continue for many hours (under certain conditions) after death. In some cases this rise of temperature has undoubtedly been due to rapid decomposition.

Relaxation of the muscles generally begins immediately after death, and is the first indication of the extinction of vitality: the jaw drops, the eyelids droop, the sphincters open. The failure of a superficial muscle to respond to galvanic stimulus may be regarded as a certain sign of death, although yielding to such stimulus is not proof of life. Muscular contractility may continue after the cessation of the heart's action from three to ten hours. In case of death the fleshy parts on which the body rests become flattened, not only on the back and sides, but other parts of the body, according to the position of the body at the time of death and subsequently.

These inferences may be drawn from the signs occurring before putrefaction, as follows:

If the body is only slightly cold, the eyes glazed, eyeballs sunken, and rigidity just setting in about the jaws, it would indicate that death had ensued only a short time before, say, from fifteen minutes to four or five hours.

If the body is perfectly cold externally, and rigid throughout, death may have taken place twelve hours before the examination, or it may have been as long as three or four days. Complete rigidity over the whole body and the appearance of suggillations over the surface, indicate that the death occurred one to four days previous. A single case will illustrate the importance of noting these phenomena. A woman was found at eight o'clock in the morning with her throat cut, the whole body cold and rigid throughout the upper part of her body. Her husband was arrested for the murder, and proved an alibi from four to eight a. m. of that day, and his counsel urged that the crime could have been committed during that time. But the condition of the body demonstrated that death must have occurred more than four hours before its discovery, and upon the medical evidence upon that point he was convicted.

Inferences may also be drawn from signs occurring after putrefaction has set in, as follows: The greenish discoloration of the abdomen, the passing away of the rigor mortis, leaving the body

cold but pliant, and the presence of the peculiar odor of putrefaction, indicate that one to three days in summer and three to six or eight days in winter have elapsed since death. The extension of the greenish-yellow discoloration more or less over the whole surface, together with the greenish-brown stains, the dark red lines over various parts, would indicate that a period of eight or ten days in summer and from ten to twenty days in winter had elapsed since death. Two or three weeks in summer and four or five weeks in winter may be presumed to have elapsed, if blebs are found over the skin, some of them opened, with maggots in the muscles; and if the body is green all over and the chest and abdomen are very much distended, the nails loose or falling out, the features swollen and the color of the eyes indistinguishable. And where the chest and abdomen have burst open and discharged their contents, the eyes are abnormally swollen and some of the bones stripped of their fleshy coverings, the examiner may assume that from two to four months have passed since death.

These inferences are only approximate and dependent on so many contingencies that the examiner should not give any positive opinion either from their presence or absence. And he should further remember that they are based upon the appearance of a body that has not been buried, but exposed during all of the time to the action of the atmosphere.

§ 136. Rigor mortis.—Simultaneously with this cooling of the body comes the rigor mortis or stiffening of the body, which follows death from any cause, and in the lower animals as well as man. It is a muscle change solely, and is independent of atmospheric condition. It may come on a few moments after death, or not for eighteen or twenty hours thereafter, owing to the condition of the muscular system at the time of death. It may be so transient as to escape notice, or it may last many hours or even weeks. Putrefaction does not commence until the rigor mortis has passed off and the body assumed its natural pliancy. Rigor mortis usually commences in the muscles of the eyes a few minutes after death; then the muscles of the neck and lower jaw become rigid; then the chest and upper extremi-

ties, and lastly the muscles of the abdomen and the lower limbs. It usually passes off in the same order, the legs often being rigid when the upper portion of the body has assumed its natural pliancy. That the seat of the rigor mortis is in the muscular system, and that it is in no way dependent on the nervous system, is the belief of many, and is shown by the fact that a muscle will continue to act, contracting under galvanic stimulus, although all the nerves supplying the muscle be divided; but if the muscle is divided it ceases immediately.

The removal of the brain and spinal marrow will not prevent muscular contraction, and the muscles of a paralyzed limb become as rigid as those in sound health. The coagulation of the muscular plasma (myosin), the albuminous principle of muscular tissue, is considered by most authorities the cause of the rigor mortis. Before the rigor mortis sets in a muscle is partially translucent; during its continuance it is opaque, and its chemical action is acid; after it passes off it becomes alkaline. It is claimed that a current of arterial blood will restore muscular contractility to a rigid limb. It is, therefore, evident that the period after death at which the rigor mortis manifests itself and its duration, which is one of its most important features, depend chiefly, if not altogether, upon the previous degree of muscular contraction. Immediately after death the muscles are in a state of complete relaxation, and the body perfectly pliant; during this period the muscles will respond to galvanic and other stimuli, as they have not lost their molecular life. Although this is no positive sign of somatic life, it enables the examiner to say either that the person is yet alive or has died very recently; and the cessation of muscular contractility under galvanic stimulus, not only proves that the person is dead but that he has been dead at least three or four hours. Until after the muscles have lost their contractility rigor mortis does not set in. In death from phthisis, cancer, or other exhausting disease, or after protracted convulsions, or when the muscular system has become exhausted by over-exertion, as in over-driven or hunted cattle; in childhood and old age, rigor mortis shows itself early and lasts but a short time. The greater the degree of muscular irritability at the time of death, the later does rigor

mortis set in and the longer it lasts. If death occurs suddenly in a previously healthy person, rigidity does not begin immediately, but once it sets in continues a long time. Thus, an examination of the bodies of criminals who have been decapitated has shown that rigidity did not set in for ten or twelve hours, and has lasted over a week even in warm weather. After death from narcotic poisons and sulphuretted hydrogen, rigor mortis does not appear or only for a short time. In these cases and in the body of an immature foetus, it is said, are found the only exceptions to the rule that rigor mortis follows death more or less closely. There have been cases where, owing to the low temperature or the use of alcohol, rigor mortis has been prolonged in cases of death from disease as long as eight days. When a body is frozen it is as stiff as a board all over, but no matter how stiff it may be from rigor mortis, there will always be some suppleness about the knee and elbow joints. While the duration of the rigor mortis is dependent upon the temperature, being shortened by heat and prolonged by cold, its coming on is not interfered with by the previous loss of blood by hemorrhage, and occurs in the bodies of those killed by lightning, though in these latter cases it is of short duration. One of the tests which may serve to distinguish real death from certain cases of catalepsy, tetanus and hysteria, accompanied by rigidity, is this: When a joint or articulation, stiffened by rigor mortis completely, is forcibly bent the rigidity is destroyed; in other cases the stiffness will return as soon as the opposing force is removed. Cadaveric rigidity is not so strong as voluntary muscular contraction, and as a rule the flexors are more affected than the extensors, so that the limbs will be slightly bent after death. As the involuntary muscles are subject to the rigor mortis, the finding of the heart contracted after death should not lead the examiner to the hasty conclusion that this was the result of previous disease. In the bodies of persons who have died sudden or violent deaths, or who seemed to be moved by some strong emotion just prior to death, there frequently appears what is called the cadaveric spasm, which has passed at once into the usual rigor mortis. Thus, the deadly weapon is frequently found tightly clasped in the hand of the suicide;

grass, weeds, etc., in the hands of persons who have drowned; and to this may be ascribed the singular expressions of countenance and positions of bodies of soldiers killed in battle.

§ 137. Cadaveric lividity—Internal suggillations.—Cadaveric lividity or suggillation, which is an unquestionable sign of death, makes its appearance in some cases soon after death, and again not for many hours; the reason for the variation in the time of its appearance has never been apparent.

It is the result of the settling of the blood in the capillaries by gravitation, and appears as livid, or violet, colored patches or discolorations upon the most dependent parts of the body, such as (if lying on the back) the back, sides, under surface of the neck, calves of the legs and under portions of the thighs. Appearing first as spots or patches, these gradually increase in size until they come together and cover the most of the body.

Very frequently cadaveric lividity has been confounded, by the post mortem examiner, with ecchymosis or bruising, and the death reported as caused by violence. Such a mistake ought not to be made by a careful examiner, for the difference can be shown by a simple and certain test. If the scalpel is drawn through a suggillation, no blood will flow; at most there will only be a few bloody points or specks caused by the division of small veins of the skin; but if the patch be ecchymosis, a flow of blood will follow the cut, or a coagulum will be seen. Besides, the ecchymosis is sometimes raised above the level of the surrounding skin, but the suggillation never is, and these spots appear, after death from any cause, even hemorrhage, and upon bodies of any age, sex or constitution.

Suggillations occurring in the internal organs produce appearances strongly resembling true congestion and inflammation, and appear chiefly in the lungs, brain, kidneys and intestines. In making a post mortem examination the internal suggillations should not be mistaken for the congestion or inflammation they so much resemble, and will not be, by a careful examiner. The fact that they appear in the dependent parts of the organs should distinguish them from the real congestion or inflammation which appears either throughout the organ or

in the upper portion; in the intestines they may be distinguished by lifting up the several folds, when the horizontal line, which marks the hypostatic settling of the blood, will become immediately broken and disjointed if the congestion is hypostatic; otherwise the redness will have involved the whole circumference of the intestines and there will be no broken line of separation. In the brain, internal suggillations may be mistaken, through carelessness, for one form of apoplexy, and in the spinal cord for spinal meningitis. In the heart, instead of suggillations, are found post mortem clots, called polypi.

§ 138. Putrefaction — Adipocere — Mummification.—Another sign of death is putrefaction, which takes place more or less rapidly, according to the condition of the body and its surroundings, and is the last of the post mortem changes. Fat, soft, lymphatic bodies, other things being equal, putrefy more rapidly than those that are lean, owing to the quantity of water in them, which hastens decomposition.

A familiar example of this is found in the bodies of aged persons which decompose more slowly than others. While difference in sex has no appreciable effect upon the time within which putrefaction takes place, it is well known that the bodies of women who die soon after child birth from any disease, decompose very rapidly.

While investigation has shown that the bodies of newly-born infants decompose very rapidly it must be borne in mind that such bodies, when the subject of judicial examination have generally been exposed in the open air with little or no covering. The manner and cause of death also materially affects the process of decomposition. The body of a healthy person who has died suddenly decomposes much less rapidly than when death has followed an exhausting sickness or a disease which impairs the blood; and it is also very rapid where the body has been much bruised or mangled. Where the body in any case has been protected from the air, as when buried by earth or walls, the process is retarded. After death by suffocation from smoke, coal-gas, sulphureted hydrogen, or from narcotic poisons decomposition is very rapid. This is not so in cases of death from

other poisons, especially phosphorus. As sulphuric acid delays the freeing of ammonia, the process of decomposition in such cases is decidedly retarded. The well-known qualities of alcohol will preserve for a long time the body of a person dying from apoplexy while intoxicated. When death is caused by arsenic, decomposition will proceed up to a certain point and then mummification ensues.

There are many cases, as yet unknown, which retard the process of decomposition, and an illustration of this was the case of four men, all about the same age and general physique, killed suddenly in a riot, who were buried at the same time in similar graves and coffins. It becoming necessary, afterwards, to disinter them, the progress of decomposition in the several bodies was found to vary very considerably.

The external or objective conditions which influence putrefaction are air, moisture and temperature. The preservation of meats and other foods in hermetically sealed cans for an indefinite length of time is a familiar illustration of the scientific fact that the exclusion of the air prevents decomposition, if the exclusion is perfect. Experiments showing that flesh may be preserved for a long time in nitrogen, one of the constituents of the atmosphere, show that oxygen is the destructive agent, and that it is only such an agent when in its free state as it is in the atmosphere and not in a compound, as nitrous or nitric acid. Not only the oxygen in the air but the amount of moisture it contains, modifies putrefaction. Thus perfectly dry air, such as is found in arid deserts, by its rapid desiccating properties, arrests putrefaction; the body losing its fluids by evaporation, dries and shrivels up into a sort of mummy. Bodies which have been enclosed in hermetically sealed leaden coffins have been found many years afterwards perfectly preserved. But if naked bodies are buried in coffins which soon decay, in shallow graves where the air can readily reach them, they speedily decay. A loose, sandy soil and a shallow grave hasten decomposition, because the air easily reaches the body, while in a deep grave, in clayey soil, it will be much less rapid.

The amount of moisture in the body itself, amounting as it does to about eight-tenths of the weight, produces putrefac-

tion; and the different organs or tissues decompose just in proportion to the amount of fluid which they contain. Unless the water is cold enough to act as a preservative, the bodies of drowned persons decompose very rapidly. The influence of the temperature on this process is very manifest. While putrefaction may commence when the temperature is 50° F., and may continue until it registers 212° F., at which point it is arrested, as the fluids have evaporated and the body has become desiccated, the temperature most favorable to it is that between 70° and 100° F. It is also arrested at 32° F., below which point the body freezes, and an animal body may be preserved for an indefinite period if completely frozen in the ice. Thus a mammoth was found in the ice in Siberia so well preserved that the dogs fed on its flesh. In one of the little villages of Switzerland there was found floating in the stream, which was fed by the glaciers of the Alps, the body of a young man, apparently about twenty years of age. None of the villagers recognized him, and they had about concluded that it was the body of some tourist lost in the mountains, when an old woman seventy-five years of age, who was supposed to know every one in the village, where she had lived all her life, was called upon to look at the body. As soon as she saw it she burst into tears, declaring it was her brother, who had been lost when hunting in the mountains sixty years before. The glacier had taken the body in its embrace and held it for sixty years, slowly carrying it towards the native village, and at last had restored the young man to his sister, white haired and old, while he was the boy of twenty as she last saw him.

On the other hand the dryness of the atmosphere and the high temperature of Egypt and adjacent countries assists in the preservation of the body, as is shown by the mummies found there, which are preserved as much by reason of this as by the embalming processes. In summer a body will decompose very much sooner than in winter, a circumstance that should not be forgotten when giving an opinion respecting the date in an unknown case.

Putrefaction advances as rapidly in one week in the open air as in two weeks in the water, and in eight weeks in the

earth. A body floating near the top of the water will decompose more rapidly than when at the bottom; and when taken out of the water and exposed to the air, the putrefaction will be far more rapid than if left in the water.

An approximate estimate of the time which has elapsed since death may be made from the external appearance of the progress of putrefaction in bodies which have been exposed to the open air. In one to three days in summer (three to six in winter) the cadaveric lividities are extended to the other parts of the body, from the dependent parts where they first appeared, and there appears a greenish or yellow greenish spot upon the front of the abdomen, the flanks and groins three or four inches in diameter, and the examiner may perceive the peculiar odor of putrefaction; during this same period the eyeball becomes soft and yielding. In a few days more this greenish discoloration has extended over the whole body, at first in streaks and then in large patches. Then the course of the blood vessels becomes marked by dirty red streaks shown throughout the surface.

In warm weather in ten or fifteen days the epidermis begins to loosen, forming blisters full of fluid. Gases now begin to form in the chest and abdomen, causing them to become very much distended; the eyeballs protrude, and the face is swollen so that the bloated features are no longer recognizable. In two or three weeks the blisters on the epidermis will probably burst open; maggots will appear and the formation of gases still continuing, the body will be enormously swollen. If the body is now punctured the carburetted hydrogen which is emitted will frequently take fire if a light is applied to it. Animal decomposition also forms other gases, such as carbonic acid, sulphuretted hydrogen, phosphoretted hydrogen, nitrogen and ammonia. Then follows the loosening of the nails: the cavities fall open, exposing their contents, the softened flesh falls from the bones, and these become exposed and fall apart from the skeleton. By this time, it is impossible to distinguish sex, unless the uterus is found, and this is the very last organ to yield to putrefaction. The uterus retains its shape and consistency longer than any other organ, some authorities saying as long

as seven months after death. This is a very important medico-legal fact, by reason of its value in the investigation of many questions which may arise closely connected with this organ and its condition. Owing to the fact that the decomposition of the internal organs is more regular in time, an examination of them is much more helpful in approximating the time of death. The membrane of the wind pipe is the first organ to show signs of decomposition, assuming a dirty red discoloration at the same time that the greenish yellow spot appears on the abdomen. This change of appearance should not be mistaken for congestion, as it has been shown that it is not the result of injection of the blood vessels. Unless death has been caused by laryngitis or suffocation, this membrane will be found very pale if examined very soon after death. It next assumes an olive green color, the rings of the trachea separate and it falls to pieces and disappears. In young infants the next organ to yield to putrefaction is the brain, which changes into a soft, rosy, pulpy mass, which flows away out of the smallest openings. This change takes place this early because in young infants this organ is very delicate and is but slightly protected from the outer air. Then decomposition manifests itself in the stomach in discolorations of the fundus and the formation of dirty red spots in the posterior portion of the fundus, owing to hypostatic congestion. These spots soon spread out and cover the whole lining membrane, presenting the appearance of the congestion or inflammation arising from irritant poisoning. It is therefore important to examine the stomach closely, as a casual inspection may not reveal the distinction between this congestion and the effects of decomposition, bearing in mind all the time that post mortem redness of the mucous membrane of the stomach cannot of itself prove a case of poisoning. The stomach then becomes soft, the spots turn greenish and gray; then black with dark red veins running through them, and finally becomes a pulpy mass. The intestines become discolored like the stomach, burst open and discharge their contents, forming a greasy mass which soon disappears. If the spleen is healthy at death, it may remain unimpaired for two or three weeks. It first turns to a dark red color, then a greenish blue,

and becomes so soft and pulpy that its substance can be rubbed down with the handle of scalpel. Then follow the omentum and mesentery, and if there is not much fat connected with them, they readily dry up and disappear. The liver does not yield to decomposition for some time after death; in adults it may be for several weeks, but in infants earlier.

If death results from arsenical poisoning, the affinity of the liver for that poison would tend to preserve it much longer. When, however, it begins to decompose, it first becomes green and then turns black, softens, shrivels and disappears. Unless the brain of an adult has been injured, as by a depressed bone, or a gun shot wound, it will resist decomposition for four or five weeks. The base then softens and becomes bluish green and the process goes on gradually upward and then inward. The heart is one of the toughest of all the organs, and decomposition begins by the softening in the columnæ carneal, and progresses outward toward the walls of the organ, which dissolve gradually until the whole becomes a shapeless mass.

Soft as the lungs are, and notwithstanding their close connection with the outward air, if they are healthy at death, they will remain sound for weeks after death. Then little bladders of air will form in the sulci, between the lobes, on the under surface, which will look like strings of beads. These increase rapidly, the lung structure first turns green, then black, softens and disappears. The kidneys become reddish brown, then greenish black, soften and disappear. Then the urinary bladder and the æsophagus yield to this process. The pancreas, though a soft organ and located near the stomach, is among the last to decompose. The tissue of the arteries resists putrefaction, while everything else near has become a mass of matter and then putrefaction sets in and this with the diaphragm disappears.

The foregoing represents the average progress of decomposition in the internal organs, both as regards appearance and time, but there may be considerable deviation from the order laid down, depending on a variety of circumstances. Some of these circumstances, as, for instance, the preservative effect of arsenic on the liver, have already been referred to, and there are others. Thus it sometimes happens that the process of putrefaction is

interfered with and gives place to a new condition known as saponification of the body, or the production of adipocere; so called because the body is converted into a substance resembling a combination of fat (adeps) and wax (cera). When the Cimenterie des Innocents was removed in 1787, this substance was first discovered and described by Foureroy. It is greasy to the touch, like spermacetti, and is whitish and discolored in appearance, and upon analysis is found to be an ammoniacal soap. Its color is brownish or yellowish white and has the odor of old cheese. It is produced in bodies buried in wet or very moist soil and in bodies which remain in the water for some time, and is produced by the fatty acids of the body combining with the ammonia, which arises from the decomposition of the nitrogenized tissues, or with lime where the saponified substance remains for any considerable time in water containing any salt of lime. Any part of the body may be changed into adipocere, but not all parts alike; and there is something in the water of privies and cesspools which promotes its formation. Adipocere will take fire and burn at a temperature of 212° F., emitting an odor resembling somewhat that of old cheese; it is insoluble in water but partially soluble in alcohol, and contains a coloring matter and an odorous and bitter principle. It will readily occur to the examiner that, because a body immersed in water is likely to be changed into adipocere, it is important to know how long a time is required to bring about this change. The body of a new born child will be changed more or less into adipocere in five or six weeks after it is immersed in water. Wells, privies and cesspools are places where such bodies are often found and if, therefore, an examination shows that saponification has not set in, the almost inevitable conclusion must be that the body has been thrown in only a short time before; and the opposite conclusion would follow if saponification had set in; and its progress would denote approximately the length of time the body had been immersed. If the body is that of an adult it will take at least a year for the conversion to become complete where it has remained immersed in water; where it has been buried in wet soil the change may not be effected for three years, although the change may begin in from

six to eight weeks. A body thus changed becomes very much heavier, as the adipocere is much weightier than the original fat. These facts have been determined by actual experiments.

The drying up of a body or mummification, which interferes with the ordinary putrefaction of the body, results either from burial in the arid and sandy soil of hot countries or from the exposure of the body to a constantly cold and dry atmosphere. It is, therefore, impossible from the mere inspection of a mummy to venture any expression as to the length of time which has elapsed since death. In the Hospice of St. Bernard in the Alps there is a room where the bodies of those who have perished in the snow are laid. The flesh and fat completely dry up, the atmosphere being constantly cold and dry.

The inscriptions on the coffins of some of the Egyptian mummies show that they have been dead thousands of years.

Antiseptics retard putrefaction, and actual experiment has demonstrated that lime retards rather than hastens decay, as it may serve to exclude the air. The strong acids and alkalies by their chemical action serve not to hasten putrefaction but dissolution, and thus the destruction of the body. The depth of the grave, the nature of the soil, and also the cause of death will materially influence the process of decomposition. And if putrefaction has set in before interment it will progress much more rapidly afterwards than it otherwise would.

§ 139. Proofs of death.—It sometimes becomes very important for a physician to determine whether a person is really dead or not, and it is said that a French physician obtained a very large prize offered by the French Academy of Science for an absolute test of death. His test consisted in holding the hand of a person supposed to be dead towards an artificial light, and if there appeared a scarlet red color where the fingers touched each other, here was proof that the circulation was still kept up and the person was not dead. On the other hand, when the scarlet space between the fingers was not apparent, life was extinct. Dr. B. Ward Richardson says that this test is not sufficient, for upon applying it to a person in a state of syncope most carefully, there was not the faintest trace of the scarlet

color between the fingers, and yet the patient recovered fully without artificial aid. So that, while he considers it *prima facie* a good test, he thinks much more satisfactory and certain tests are found, in the pulsation of the heart; the respiratory murmur; pressure on the veins; the electric test for muscular irritability; the ammonia hypodermic test; coagulation of blood in the veins, rigor mortis and decomposition. No uncertain or doubtful test should be relied upon, for it very seldom happens that there is any necessity for a hurried interment.

Holding a feather near the nose or mouth to determine, by its motion or otherwise, whether breathing has ceased; and a mirror to the mouth to indicate breathing by the deposit of moisture upon its surface, are tests for determining whether respiration has ceased; yet apply them to a hibernating animal, known to be alive, and respiration would not be shown. Another process is to place pieces of paper, sensitized with acetate of lead over the nostrils, the chemical traced on the paper in the shape of various characters. If the person is dead, the chemical will darken and the figures on the paper will appear and the slightest trace of decomposition will make itself apparent. If the eyeball is touched and any life remains contraction will ensue.

If a long needle is thrust into the breast with a small flag at its upper end, it will indicate the slightest movement of the heart, by the waving of the flag.

The blood or lymph may be examined for traces of decomposition.

In cases of trance, catalepsy and other instances of suspended animation, the body does not exhibit either the pallor or coldness of real death. If a ligature be applied to the finger of a corpse, no change of color or in the finger will be observed; but if the experiment is tried on a living body, the tip of the finger will turn a deep red or purple color by reason of the arrest of the capillary circulation at that spot, and will become slightly swollen. After death the eyes lose their sensibility to light. This alone, however, is not conclusive proof of death, because the same insensibility will result from the action of certain poisons.

Another physician gives his experience with the "Diaphanous

Test of Death" as follows: Half an hour after the death of a lady seventy-three years of age I was called upon to determine if life was extinct. There was no sign of breathing or pulse or of heart beat and the hands slightly flexed, were rather rigid, but the countenance looked like that of a living person, the eyes being open and lifelike. Although I believed her dead, upon being informed that once before she had passed into this death-like state, I called to my assistance a physician who had made a study of the signs of death and we then applied all of the tests known and valued by the profession, with the following results: 1. Heart sounds and motion entirely absent, together with all pulse movement. 2. Respiratory sounds and movements absent. 3. Temperature of the body taken from the mouth, the same as that of the surrounding air in the room 65° F. 4. A bright needle plunged into the body of the biceps muscle (Clouquet's needle test) and left there, showed on withdrawal no sign of oxidation. 5. Intermittent shocks of electricity at different tensions passed into various muscles and groups of muscles, gave no indication whatever of irritability. 6. The fillet test applied to the veins of the arm (Richardson's test) caused no filling of the veins on the distal side of the fillet. 7. The opening of a vein to ascertain whether the blood has undergone coagulation showed that the blood was still fluid. 8. The subcutaneous injection of ammonia (Monte Verde's test) caused the dirty brown stain indicative of dissolution. 9. On making careful movements of the joints of the extremities of the lower jaw and of occipitor frontalis, rigor mortis was found in several parts. Thus of these nine tests eight distinctly declared that death was absolute, the exception (the fluidity of the blood) being a phenomenon quite compatible with blood preternaturally fluid and at a low temperature, even though death had occurred. The tenth and last was the diaphanous test, which was carried out by the aid of a powerful reflector lamp yielding an excellent and penetrating light, and the scarlet line of light between the fingers was as distinct as it was in the hands of the examining physicians. Of course, in view of the other tests it was apparent that she was dead, but to be certain, the temperature of the room was raised and decomposition soon set in. This case showed the

unreliability of the diaphanous test and, as already said, in cases of syncope, the line sometimes fails to appear.

It is also said that leeches will not draw blood from a corpse. If a blister be produced upon a dead body by means of heat, it will contain air only; if life remains it will contain water. The number of tests of death have not as yet led physicians to discontinue their search for other and more satisfactory means of determining with accuracy when life is extinct.

All of these tests and many more have been proposed and tried because of the widely spread but erroneous belief that many persons every year are buried alive. The truth is that such fatalities are very infrequent, especially in these days of the almost universal practice of embalming, but the possibility of such a catastrophe should be guarded against most carefully.

One authority (B. W. Richardson) says: "In cases where a question arises as to whether a person is really dead or only apparently dead, place the body in a warm room; if living, the warm temperature will aid in restoration; if dead, the warmth will hasten putrefaction and solve the question fully."

In some countries the burial regulations require the bodies to remain unburied for a certain length of time, and in others mortuaries are built, where all bodies are placed before burial, and by means of mechanical appliances the slightest movement of a body is communicated to the office, where an attendant is always on guard. Attached to these mortuaries are laboratories equipped with all means for resuscitation and physicians and attendants are always on duty.

CHAPTER XV.

INSANITY.

§ 140. Insanity—Definition generally—Laws in relation to insane.	§ 143. Eccentricity not insanity.
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§ 140. Insanity—Definition generally—Laws in relation to insane.—In speaking of insanity, this word will not be confined to what is technically called insanity or lunacy, but will refer to all forms of mental alienation or unsoundness, from eccentricity to idiocy. As viewed from a medical standpoint, it will not be for the purpose of giving medical information, but to show its bearing on the legal status of the disease and the legal rights and responsibilities of the physician in dealing therewith.

Insanity in its most comprehensive sense may be considered an ineptitude for conducting one's self in the ordinary affairs of life and in one's relations with society. This ineptitude may be either total or partial, constant, temporary or intermittent; and, whenever it exists in an individual, it, in the first place, either wholly abrogates or materially modifies the relations before subsisting between him and society, and other individuals; and, secondly creates a new relation growing out of the fact of his mental disease. The laws, which assume to regulate the ordinary affairs of life and man's relations with society, are founded on the supposition that the subjects of their regulation are of sound mind, or, in other words, that they are competent to conduct themselves in those affairs and relations; consequently when a person becomes disordered in mind, to the point of being incompetent to transact the ordinary affairs or under-

stand the relations of life, it follows that all legal regulations, to which he was before subject, must undergo corresponding changes and modifications. In addition to which it becomes necessary, also, to provide by law for the new relation, which the fact of insanity creates between the subject of it and society. The aggregate of all these legal modifications, and the knowledge and proper application of them in practice, constitute the medical jurisprudence of insanity.

The legal rules, by which the relations of the insane are regulated, have been predicated upon the most common and obvious of the external phenomena of mental disease; and if these were constant, certain and well known the medical jurisprudence of insanity could perhaps be learned with comparatively little difficulty. But there are several reasons or causes why this is not so. In the first place, since the establishment of the rules of the common law relating to insanity, the external phenomena of that disease have been almost entirely changed, owing to the different mode in which it is now considered and treated. Another circumstance, which has contributed to the difficulty, is that, while the scientific knowledge of insanity has been making continual progress since the commencement of the nineteenth century, the popular notions of it have remained nearly or quite stationary. Another difficulty, which has operated perhaps less powerfully than any of the others, is that the principles of law, by which the relations of the insane are regulated, have been practically applied and administered, according to the popular notions, rather than the scientific knowledge of the subject. A subject so vast in its bearings upon our good or ill being, so varied in its forms and even at this day so far from being thoroughly understood, daunts the most learned in attempting to define its limits and picture its forms.

§ 141. Progress in study of insanity.—Although the most skilled and best physicians do not claim to be able to define or always to detect insanity, yet great has been the progress of the learning in regard to its nature, symptoms and effects, and of the humanity shown towards the helpless victims of what cannot rightfully be called other than a curse. Not many years

have elapsed since an insane person, an imbecile or an idiot was regarded as one cursed of God and possessed of the devil. If harmless he was left to starve with the cattle, and if violent chained to a post and allowed to starve in solitude, so that his more fortunate fellows might not be tortured by him. There was supposed to be no cure for it; indeed, any attempt to cure an insane person or alleviate his misery was considered "flying in the face of Providence" and meriting a similar curse.

It is ignorance that makes cowards of us, and what we do not understand we are very apt to be afraid of and to throw the responsibility upon the Almighty; and so the people in former days, knowing nothing to do for insanity, proclaimed that it was a special visitation of God, and therefore incurable, and that it was better to let the victims die and go to their master, the devil, as speedily as possible.

Even men of learning considered it as resulting from a direct exercise of divine power, and not from the ordinary laws of nature, and accompanied with mysterious and supernatural phenomena, confessedly above their comprehension, therefore incurable, or at least not susceptible to the influence of ordinary curative means. The treatment accorded to the insane during that period cannot better be described than by quoting Dr. Ray's description of it. He says: "Instead of the kindness and care, so usually manifested towards the sick, as if it were a natural right for them to receive it; instead of the untiring vigilance, the soothing attention, the lively solicitude of relatives and friends, the patient, afflicted with the severest of diseases and, most of all, dependent for the issue of his fate on others, received nothing but looks of loathing; was banished from all that was ever dear to him, and suffered to remain in his seclusion, uncared for and forgotten. In those receptacles, where living beings, bearing the image and superscription of men, were cut off from all the sympathies of their fellow men, and were rapidly completing the ruin of their immortal natures, there were scenes of barbarity and moral desolation, which no force of language can adequately describe."

Another writer says:

"Nothing illustrates the progress from barbarism to civiliza-

tion more than the care of the insane. Among savages, with a simple tribal organization, insanity could never have played the important role it does in modern society. The simple relations of those people to each other and to the tribe would permit of a comparatively wide departure from normal mentality without the disrupting of these relations. When insanity was accompanied by violence, it would lead to the individual being expelled from the tribe, or, if his violence was extreme, to his being killed as a mere matter of self preservation. If the mental disease was accompanied by visions, marked delusions, and an inability to coördinate the conduct upon tribal lines, it would frequently result in the insane person being exalted to the headship of the tribe, or possibly made a great religious teacher or medicine man. Often the dignity of saintship was conferred upon such unfortunates, and they were worshipped as direct agents of the Deity, or even the Deity itself.

Among the classical writers is some reference to insanity as a disease. The first hospital for the insane was established in Jerusalem in 491 A. D., and in the twelfth century, at Bagdad, a 'House of Grace' was founded for the reception of lunatics, where they were kept in chains. It was occasionally visited by magistrates for the purpose of liberating those who had recovered their reason. That there was such a possibility can scarcely be entertained, when the conditions of those early places for the care of lunatics is considered.

We have little knowledge of the condition of the insane in the middle ages. The first hospital for the insane established in Europe was that known as Bethlem, in the city of London. In the confiscation of the church property made by Henry VIII, a monastery in the city of London, called Bethlem, was presented to the municipality, with all its income, for the care of lunatics. A corruption of the word Bethlem led to the term Bedlam, which is still applied to any place which is noisy, disorderly, and disreputable. The first hospital for the insane in France was not founded until nearly one-half century later.

From the middle of the sixteenth century to the beginning of the nineteenth marked a period in which the care of the insane was of the most brutal description. It was believed that

insanity marked an imperfection in the human will and that the peculiar proclivities of the insane could be overcome if they were only given a sufficient motive. Hence, their mental wanderings and delusions were treated with blows and chains. There was an intense fear of the insane, and they were thought to be possessed of superhuman strength, a delusion, by the way, which has not yet disappeared. Hence, Bethlem in London, and the great hospitals of Paris, were simply prisons with iron doors and small stone cells and straw for the lunatics to lie upon. They frequently had little clothing, were eaten by rats, and were in the care of brutal keepers often selected from the criminal classes. The large asylums were show places which people could visit by giving the keepers a small fee.

The dreadful condition of the lunatics in the Paris and London asylums never had its counterpart in this country. This was due to the fact that there were no large centers of population in this country prior to the beginning of the nineteenth century, and the insane were mostly cared for in a domestic way, or found a home in the various almshouses in the rural districts. One difficulty was that those lunatics who showed violence had no proper place of restraint, and during the early part of the century the county jail was often a receptacle for these unfortunates. It remained for Dorothy Dix to inaugurate a reform in this country. From 1840 she agitated the subject, visiting the insane in county houses, and then going before Legislatures and other public bodies and explaining the necessity for State care of the insane.”¹

In 1791 the celebrated Pinel (called the Howard of the insane) commenced his labors for these poor creatures, “with an ardor of philanthropy that no discouragement could quench and a courage that no apprehension of danger could daunt,” and succeeded in removing the chains of the maniac and establishing his claims to all the liberty and comfort which his malady had left him capable of enjoying.

We say today that such ignorance was criminal, and God

¹ Harold N. Moyer, M. D.

grant that the generations which come after us may not be able to charge us with any similar criminality.

§ 142. Treatment of insane—Legal and medical definition.— We now know that insanity is a disease, just as much as typhoid fever, and that frequently we can trace its rise, progress, culmination and disappearance. We should never forget this, but treat it as a disease and those suffering from it as other patients, diagnosing their symptoms and treating them as sick people requiring the best of care. Having learned this, some people—and among them I include some physicians—have swung so far to the other extreme as to declare that all men are insane.

This, they say, because there are very few men whose conduct or language at some time or another has not been eccentric; but eccentricity is not insanity. It is often only a species of individuality, and again a kind of a defiance of the restraints of society. As illustrative of this tendency Dr. William A. Hammond, in his "Treatise on Insanity in Its Medical Relations," has so expanded the definition of insanity as almost to embrace the world, and to cast a doubt upon the sanity of what is not embraced. In his opinion, formed, as he says, after close experimental study, the term "insanity" or "mental aberration" has hitherto been applied in altogether too limited and illogical a manner to those only who, at some time or other, present certain marked symptoms, which they can not avoid exhibiting, and which are sufficient to indicate to the world that they are not in their right mind. And, starting with the assumption that the brain is the seat of the mind, or, in other words, that the mind is nothing more than the result of cerebral action, he regards all normal mental phenomena as the result of the action of a healthy brain and all abnormal manifestations of the mind as the result of the functionaries of a diseased or deranged brain, and *thereupon* he concludes that all these latter should be included under the designation of "insanity" as properly as the former are embraced under the term "sanity," since there can be no middle ground; the brain is either healthy or unhealthy; if healthy, the product of its action being sanity, and if unhealthy, insanity.

This definition is ample for all purposes, and it is true in a strictly medical sense; for if nothing but a healthy brain can accompany sanity, then the least unhealthiness of the brain (and what is there that does not affect it in some way?) must cause insanity. But in a legal sense nothing could be more erroneous than this omnibus definition, and this distinction should always be borne in mind.

Legally, insanity does not exist until responsibility and capacity to transact ordinary business have left the patient. Dr. Hammond recognizes this distinction, but declares it is utterly untenable from a medical point of view. He says: "A large proportion of the population of every civilized community is composed of individuals whose insanity is known only to themselves and those who are in intimate social relations with them; who have lost none of their rights, privileges or responsibilities as citizens; who transact their business with fidelity and accuracy and yet are as truly insane, though in a less degree, as the most furious maniac; and to many of them life is a burden they would willingly throw off, if death concerned them alone, for they are painfully conscious of their condition and morbidly apprehensive in regard to the future."

An illustration of this was furnished by the testimony taken in a contested will case in Ohio not long ago. The testator was proven to have acquired considerable property by shrewd business methods in the handling of stock. His knowledge of the cattle market and its fluctuations was the wonder of his neighbors, and his judgment in his purchases and sales was always sound. And yet, when he was at home, he would sit up all night in his bed with a hat on for fear the witches would pull out his hair; he would take a broom and drive the witches out of the doors and windows; would discuss cattle trades and markets with his horses, and even with his hitching posts, and politics with his garden tools; and the entries in his account books on one page would be of a business transaction, complete and accurate in all its details, and on the very next page would be found a circumstantial account of an encounter with spirits and the methods by which he drove them away from his house.

Dr. Hammond also says that there are few people who have

not at some time or other been medically insane, since he considers it an undoubted fact that a disordered mind is just as surely the result of a disordered brain as dyspepsia is of a deranged stomach; that a scarcely appreciable increase or diminution of the blood supply of the brain will lead as surely to mental derangement of some kind as an apparently insignificant change of the muscular tissue of the heart to fat will lead to a derangement of the circulation; that in the one case there may be an hallucination, a delusion, a morbid impulse or a paralysis of the will, just as in the other there may be an intermittent pulse, a vertigo or a fainting fit.

§ 143. Eccentricity not insanity.—That eccentricity is not incompatible with soundness and clearness of mind was never better shown than in the life of Dr. Samuel Johnson, who was and is regarded as one of the most vigorous thinkers of his time and was one of the greatest sages and ablest writers that ever lived.

Speaking generally of his whole life, it may be said that from his childhood he struggled against scrofula, melancholy, indolence and the fear of insanity, and most of the time passed the morning in doubt whether he would have food for the afternoon. He was ungainly in appearance and so inconsistent in his habits that sometimes he practised great abstemiousness and at other times devoured large meals with brutish slovenliness and voracity. He would eat with his fingers and cover himself and all around with the contents of his plate and cups. Sometimes he would drink nothing but water, and again he would drink wine by the tumblerful. His income was small and uncertain, yet he kept a set of old men and women about his house, whose quarrels and disagreements often drove him out of doors. Generally he was very talkative, but at times he would sit in company and drink a dozen cups of tea without uttering a syllable, and when not talking to others, kept muttering to himself. In walking he was constantly gesticulating, and would not go in or out of a door unless he could effect his entry or exit in a certain preconceived number of steps, and so as to step in on a particular foot, turning back and recommencing until he succeeded as he desired. At

table he would sometimes stoop suddenly, seize the foot of a lady near him and draw off her shoe, in apparent unconsciousness. There was a row of hitching posts near his house, which he would not pass without touching singly, and if he omitted touching one of them, he retraced his steps to remedy the neglect. He hoarded up orange peel for some mysterious purpose he would never divulge. He suffered remorse of conscience for having taken milk in his coffee on Good Friday. He believed in ghosts and went ghost hunting in Cock Lane.

Indeed, one of his contemporaries² wrote of him in 1766 as follows: "He is as odd a mortal as you ever saw, and you would not at first sight suspect he had ever read or thought in his life or was much above the degree of an idiot."

Suppose the above description of his daily conduct was set forth in a hypothetical question to a medical expert, and he was asked whether the person therein described was sane or insane, would not nine out of ten unhesitatingly pronounce him insane and the tenth decline to give any opinion? And they would all have been mistaken, for he was sane and possessed a very remarkable and clear mind.

This well illustrates the difficulty under which the medical witness labors in cases of doubtful sanity. He who can tell the exact point at close of day when daylight ends and darkness begins might be able to tell where eccentricity ends and insanity begins, where folly becomes madness or passion lunacy. The data for a proper judgment in such cases are all involved in uncertainty. The inner workings of the man's mind cannot be seen; his intellectual faculties cannot be tested as a chemical compound can, and, resolving it into its component parts, disclose its properties. Very frequently the examiner has nothing to start with but the effect, and must reason back to the cause.

§ 144. Crime not evidence of insanity.—Then there are men who do not say everybody is insane, but that everybody who commits a crime is insane, and the more atrocious the crime the greater probability of insanity. So able a journal as the *West-*

² William Sam'l Johnson.

*minster Review*³ has given utterance to these words: "The public mind is awakened to the fact that all crimes are the result of perversions of intellect, and, like other species of insanity, deserve to be treated with more of compassion than vengeance." And at one time in Germany the following question was gravely discussed among its medical jurists: "If monomania consists in a subjection of the intellectual faculties to one predominant idea, ought we not to regard a person monomaniacal whose mental faculties are governed by a vivid affection or a violent passion? Or, in other words, is the existence of monomania to be conceded, whether the reason is affected by an erroneous conviction or a violent passion?"

An eminent professor (Heinroth) insists that moral depravity is the essential cause of insanity, and still another authority (Dr. Hunt) assures us that in his opinion insanity is contagious, and that a man is as liable to catch insanity as he is smallpox, and therefore mobs are excusable for their excesses, whatever they may be. At the trial of Hillairand for attempting to murder ex-Marshall Bazaine, medical witnesses testified that the prisoner was the victim of patriotic insanity and not responsible for his actions. To counteract such doctrines the writer would advocate what Dr. Beck calls a corollary to all this kind of teaching, viz.: The enactment of a law that the murder (or other atrocious crime) shall not be the *first* and *earliest* proof of insanity.

§ 145. Commitment of insane—Statutes as to insane.—One of the important duties a physician is called upon to perform is that of testifying on the question of the commitment of an alleged lunatic to an asylum. The proceedings for such commitment are detailed in the statutes of the several states.

Although the days when the private madhouse with its abuses flourished, have passed away, and we very rarely, if ever, hear of such things in this country, yet the temptation, for purposes of revenge or from pecuniary considerations, to incarcerate one who cannot otherwise be controlled in an asylum still exists, and those who are capable of doing such things are not all dead. In February, 1891, in the Superior Court of New York, a cer-

³ Vol. 23, page 222.

tificate was presented, signed by two responsible and reputable physicians, one of them said to be a celebrated insanity expert, although, unfortunately, his name is not given, to the effect that one Peter Kehr was insane, and upon that certificate an order for his commitment was issued.

The first knowledge that Mr. Kehr had of this order was communicated to him by some friends, who had heard of it, and he declared not only that he was not insane, but that he had never been examined by any physician for the purpose of testing his sanity, and upon his motion the order was set aside. In setting it aside the court said the proceedings were regular, that no improper motives were charged or apparent, and that an examination of Mr. Kehr refuted the certificate.⁴

What has been done in New York may be done elsewhere, but to accomplish such a result the assistance of a physician is absolutely necessary, and one who can be so controlled as to make either a false certificate or one that he does not *know* is true must be either a fool or a knave, for a physician who will commit a man to an asylum as insane on a casual examination, or who can be persuaded that one whom he has known for a long time has become insane, without any premonitory symptoms, must be placed in one class or the other. It ought to be regarded as a very suspicious circumstance in such cases if the family physician was not the one called upon to make the examination and the certificate, and any physician called in such a case ought to make diligent inquiry as to the necessity for employing one who was not the family physician.

All that the statutes usually require is that some resident citizen of the proper county shall file with the probate judge an affidavit setting forth that he believes a person to be insane and dangerous to be at large. Then the person named is brought before the probate judge and witnesses are subpœnaed, which should include at least one reputable physician. The judge hears the testimony, but in fact relying almost wholly upon the physician's testimony, either commits the accused to the asylum or discharges him. It frequently happens that the physician called in

⁴ 8 Medico-Legal Journal, pp. 319, 368, 369.

has never seen the patient before, or has seen him only a few times. The most he knows, and frequently all he wants to know, is that the relatives of the alleged insane man want him sent to the asylum, and that they depend upon his testimony to send him there. He makes a hasty examination, listens to the stories of the patient's eccentric manners as detailed by these prosecuting witnesses, and certifies that he is insane. He is very apt to forget that he is not supposed to be there as the paid servant of the prosecution, but to shield the patient and protect him; that every man is supposed to be sane; that there must exist a very clear case if an examination of a few minutes, in the excitement of a trial, while the patient is surrounded by strange people, into whose presence he has been hurried by the sheriff, either from his home or the adjacent jail, could have any weight with a physician who had any right to call himself reputable or respectable.

In Massachusetts they have this very salutary provision of law for such cases:

"A physician who shall unlawfully conspire with a person, unlawfully or improperly to commit to an insane asylum or hospital in this commonwealth a person who is not insane shall be punished by fine or imprisonment, at the discretion of the court."

Various occasions arise in which the law has deemed it necessary to determine the sanity or insanity of a person, and in many of the States the Legislature has made provision for each particular case, of which the following are illustrations.

Thus, in civil actions, when the insanity of a party is not manifest to the court, and the fact of insanity is disputed by a party or an attorney in the action, the court may try the question or impanel a jury to try the same.

In criminal cases, where a person is confined in jail, at any time before indictment found any citizen may give notice in writing to the sheriff or jailer that such person was insane, or an idiot, at the time the offense was committed, or has since become insane; thereupon the sheriff or jailer must forthwith give notice to the probate judge, clerk and prosecuting attorney of the proper county that such claim has been made, and the probate judge

shall hold an examining court and upon testimony shall decide whether the accused is an idiot or was or is insane.

When the attorney of a person indicted for an offense suggests to the court in which the indictment is pending, at any time before sentence, that such person is not then sane, and a certificate of a reputable physician to the same effect is presented to the court, the court orders a jury to be impaneled to try whether or not the accused is sane at the time of such impaneling; on the accused is put the burden of proving the insanity, and usually three-fourths of the jury decide the question.

If a convict sentenced to death appears to be insane, the sheriff must forthwith give notice thereof to a judge of the court of the judicial district and summon a jury of twelve impartial men to inquire into such insanity, at a time and place to be fixed by the judge.

The law of Ohio at one time provided that in such a case the governor should inquire into the facts, and gave him power to pardon such lunatic or to commute or suspend the sentence, and a very peculiar case arose after the exercise of such power by the governor. Sarah M. Victor was convicted of murder in the first degree and sentenced to be executed August 20, 1868. In July she became insane and the governor suspended her sentence until November 20 and ordered her confinement in an asylum. Before that time arrived, as there was no change in her condition, he commuted her sentence to life imprisonment in the penitentiary. She never accepted or assented to the commutation, but was, after the restoration of her reason, incarcerated in the penitentiary. In January, 1876, she commenced proceedings in *habeas corpus*, claiming that she was entitled to be set at liberty. Upon a hearing in the Common Pleas Court it was decided that, never having accepted the commutation, she was illegally detained in the penitentiary, but that she was not entitled to her liberty and ordered that she be delivered to the sheriff of the proper county to be hanged in accordance with the original sentence. This was more than she bargained for, and so she took her case to the Supreme Court, which decided that the commutation was legal,

whether she assented to it or not, and ordered the warden to hold her in accordance with the governor's order.⁵

§ 146. Classification of mental unsoundness.—The general term mental unsoundness is applied to all classes and descriptions of persons possessing unsound minds, and various subdivisions of the general term have been suggested by medical and legal writers. The following are the most important:

First. The subdivisions adopted by Dr. Beck.⁶

Mania, in which the hallucination or illusion extends to all kinds of objects and is accompanied with some excitement.

Monomania, in which the hallucination or illusion extends to but one object or a small class of objects.

Dementia, wherein the person is rendered incapable of reasoning, in consequence of functional disorder of the brain not congenital.

Idiotism, congenital, from original malconformation in the organ of thought.

Moral insanity.

Lord Coke, one of the earliest as well as one of the best legal writers, enumerates four classes of persons who are deemed in law to be *non compos mentis*, viz.:

An idiot or fool natural.

He who was of good and sound memory and by the visitation of God has lost it.

A lunatic, who has lucid intervals and is sometimes of a good and sound memory and sometimes *non compos mentis*.

A person, *non compos mentis* by his own act, as a drunkard.

In Lord Coke's time they do not appear to have had any persons who were afflicted with moral insanity.

Sometimes the terms illusion and hallucination are used interchangeably, but they are technically applicable to different conditions. Hallucinations are dependent on the state of the intellectual organs; illusions on that of the organs of sense. As one author says, the respectable tippler returning home, who sees

⁵ In the matter of Sarah M. Victor, 31 Ohio St. 206.

⁶ Beck Med. Jur., p. 705.

the pavement rising in teasing waves before him, or finds his key-hole stolen, suffers an illusion merely; but when he falls into the pit of *mania-a-potu* and sees devils or slimy reptiles crawling over his bed, or hears sibilant fiends searching for him, then he is the victim of an hallucination.⁷

And so with the terms idiot and imbecile. An idiot is one who is unsound of mind from birth or, as Sir William Blackstone says: "One that hath no understanding from his nativity and therefore is by law presumed as never likely to obtain any," while an imbecile is one whose mental unsoundness arises from defective development, but that defect originates after birth and is therefore less complete.

It has frequently been attempted to fix the limit of ignorance which shall stamp a man as an idiot or one remove from an idiot. As, for instance, it is said an idiot is one who cannot count twenty, or who cannot tell his age, or who was his father or mother. Two other supposed tests are given here as curiosities, and they are the following: "An idiot is one who hath no understanding of reason what shall be for his profit or what for his loss." Judging by the results which all of us have seen, it doesn't seem possible that every man who doesn't know what is for his profit or loss is necessarily an idiot. The other is, "if a man be able to beget either son or daughter he is no fool natural." Nothing in history or medical education will give consent to the soundness of this proposition or its converse.

Dr. Hammond's subdivision is as follows:

Perceptual insanity; characterized by the tendency to the formation of erroneous perceptions either from false impressions of real objects (illusions) or from no external excitation whatever (hallucinations).

Intellectual insanity, characterized by the existence of delusions.

Emotional insanity.

Volitional insanity.

Mania.

General paralysis.

⁷ Odronaux Med. Jur., p. 183.

Idiocy and dementia.

The analysis of Casper and Liman is more simple, viz.:

Insanity in its progress, including despondency, melancholy, excitation and mania as among the various forms in which this progress exhibits itself.

Insanity in its results, including imbecility, dementia and fatuity.

But, one of the plainest and most comprehensive as well as the easiest understood by all who study this subject is the analysis of Dr. Ray. He says:

The various diseases included in the general term insanity or mental derangement may be conveniently arranged under two divisions founded on two very different conditions of the brain; the first being a want of its ordinary development, and the second some lesion of its structure subsequent to development. In the former of these divisions we have idiocy and imbecility, differing from each other only in degree, or rather in the time of the arresting of development.

The various affections embraced in the latter general division may be arranged under two subdivisions, mania and dementia, distinguished by the contrast they present in the energy and tone of the mental manifestation.

Mania is characterized by unnatural exaltation or depression of the faculties, and may be confined to the intellectual or to the effective powers, or it may involve them both; and these powers may be generally or partially deranged.

Dementia arises from a more or less complete enfeeblement of the faculties, and may be consecutive to injury of the brain, to mania or to some other disease; or it may be connected with the decay of old age.

The classification made by Dr. Guy in his work on *Medical Jurisprudence*, is comprehensive and useful and his definitions of the different classifications are most apt. He classifies mental unsoundness as follows:

FROM DEFECTIVE DEVELOPMENT OR DIMINISHED ACTIVITY OF
THE FACULTIES.

Congenital or occurring in childhood.	Amentia	1. Idiocy (including cretenism). 2. Imbecility.
Occurring subsequent to the development of the faculties.	Dementia	1. Consequent on mania, mental shock or injuries to the brain. 2. Senile.

FROM UNDUE EXCITEMENT.

Mania	1. General	a. General
	2. Intellectual	
	3. Moral	a. General
		b. Partial

And the following are his definitions taking up the different classes and subdivisions in their order:

Amentia.

Idiots are unsound of mind from birth. They are generally deformed in body as well as mind; their heads are generally small, although occasionally very large; depressed at the forehead, flattened at the sides and grotesquely shaped; the eyes are small, deeply set and often squint; the mouth large and gaping, the lips and often the tongue thick, and other features imperfect; the complexion pale and unhealthy, the chest narrow and contracted; the limbs ill formed and the gait awkward and unsteady. The senses are dull or altogether wanting. The sight is imperfect, and they are often deaf or hard of hearing, dumb, or expressing their wants only by inarticulate sounds; the senses of smell and taste being without power of discrimination, they have no choice of food. Sensation is not followed by perception; their attention cannot be aroused, and they are incapable of any extended instruction and show scarcely a trace of memory, judgment or imagination.

These unfortunate creatures remained neglected even after the attention of mankind had been aroused to the sufferings and ill-treatment of the insane. But now almost every State has its institution for feeble-minded youth, where their bodily wants are supplied and such intelligence as they may have is aroused; and it has been conclusively shown that they are generally found capable of acquiring some knowledge useful to themselves and others.

There is said to be a remarkable form of idiocy called Cretinism, endemic in the canton of Valais among the Alps and in some other mountainous countries. There are three classes, called cretins, semi-cretins, and cretins of the third degree. Cretins are absolute idiots conforming to the foregoing description, with the distinctive addition of a peculiar deformity of the throat to which they are subject. They are unable to speak, and do not seem to possess any human faculties. Semi-cretins show a higher degree of intelligence, and may be taught to read, like parrots, with no understanding of the meaning of the words. Cretins of the third degree are still higher in the scale of intelligence, and may be taught to do many things by reason of their power of imitation. In the semi-cretins and cretins of the third degree the mental deficiency is not always congenital, but supervenes in early childhood. If they are taken away from home and placed under proper care and treatment much improvement may be made in them.

Idiots are wholly irresponsible.

An autopsy will generally disclose a deficiency of gray matter (from the defective size of the brain) and a want of proper development of the convolutions; sometimes an absence of the entire cerebellum, of the pineal gland, of part of the fornix, of the olfactory bodies, thalamus, and corpus striatum; and an absence, or rudimentary state, of the corpus callosum and soft commissures.⁸

Imbeciles are those whose mental unsoundness occurs in early childhood.

They are often under the dominion of some childish fancy

⁸ Reese Med. Jur., pp. 543, 544.

..

as a maniac is of his delusion. One of these, whose case was brought before the courts, had a strange fancy for wind-mills and an equally strong aversion to the water-mills. Having been put under the care of some people, who lived in a part of the country where there were no wind-mills, he cut the calves of their children's legs to the bone and said he would kill some one if it would result in his being taken away from a place where there were no wind-mills. Imbeciles are capable of being taught much more than idiots, and frequently learn trades and follow them for years; frequently there is nothing in their appearance to be noted at a casual glance to show any intellectual feebleness.

Like idiots, however, they are irresponsible.

The precise boundary between idiocy and imbecility cannot be defined so far as intellectuality is concerned, unless the distinction is made to consist in the congenital character of the former. Neither of them is likely to be confounded with mania and monomania, since there is a total absence of ideas and of the power of thought, both of which are present in maniacs and monomaniacs, although perverted and irregular. Moreover, idiocy and imbecility are destitute of hallucinations, which are characteristic of mania and monomania. Their resemblance to confirmed dementia is much stronger.^s

Dementia.

This disease, unlike amentia, supervenes slowly or suddenly in a mind already fully developed. In this disease the faculties are enfeebled, and those whom it attacks are like men who have not the energy or power to perform the duties of manhood. In amentia the faculties are imperfect and its victims are like children who have never learned the duties of manhood. It differs from mania inasmuch as the phenomena of one arises out of the exhaustion and torpor of the faculties and those of the other from their intense excitement.

When there is a sudden mental shock the mind seems to be arrested and fixed during the remainder of life, in sad abstraction, on that one event. Like the young Norwegian fisherman who, on the day before his wedding, took his boat to go to the

^s Reese Med. Jur., pp. 543, 544.

bride's house to spend the night in feasting, in accordance with the universal custom; his bride, accompanied by her parents, came out in a boat to meet him, and while the boats were returning together, a sudden squall upset the bride's boat, and she and her parents perished.

Becoming insane, ever after he would sit on a small stool, going through the motions of rowing, and warn everybody who approached him to beware of the deep water.

Senile dementia, or that which is incident to persons advanced in years, is the most simple and well marked form of that variety of dementia which approaches and takes possession slowly of the faculties. The first symptom of senile dementia is loss of memory of recent events; then there is dullness of perception and apprehension and a want of power to fix the attention or follow any train of thought. The power of attention and the control of the will over the thoughts becomes more and more enfeebled and the reasoning powers decline. In this stage of the disease, the patients recognize their friends, but display no emotion on seeing them, and they employ themselves without seeming to take any interest in their employment. Then follows entire loss of attention, memory and reason. In the last stage of all even the animal instincts are lost and there is neither sensation, memory, thought nor reason, only bare physical existence.

The man is "sans everything." This stage of the disease is usually accompanied by partial or general paralysis of the limbs.

Where the disease has progressed so far as to render the patient utterly incompetent to understand or engage in the ordinary affairs of life, he is considered irresponsible, civilly and criminally.

Mania.

This term includes all those forms of unsoundness of mind which are characterized by undue excitement of the faculties.

Dr. Guy (writing in 1844) says that moral insanity, one of the most important forms of mania, is not recognized by the law.

General mania affects the intellect and the passions and throws

the whole mind into a state of mingled excitement and confusion. It is characterized, according to Pinel, by "the rapid succession or uninterrupted alternation of insulated ideas and evanescent and unconnected emotions; continually repeated acts of extravagance, complete forgetfulness of every previous state, diminished sensibility to external impressions, loss of the faculty of judgment, perpetual and purposeless activity." Except when it is the immediate result of injuries, moral shock or acute disease, it is generally preceded by a change in the natural condition of the mind; sometimes the result follows rapidly and vigorously, at other times slowly and with less force. In the first case madness breaks out at the end of some hours or days, after a state of anxiety and uneasiness, accompanied by headache, sleeplessness, agitation or depression, and appearances of cerebral congestion. The patient begins to babble, cry and sing and then becomes wild and agitated. At this stage of the disease he is often taken for an intoxicated person, but an examination into the previous circumstances and duration of the disease soon shows his true condition.

In the other case thought is affected gradually and often very slowly; the patient is generally conscious of some disorder in his intellectual faculties; he is beset by new and odd notions and by unusual inclinations; he feels himself changing in his affections, and, with a consciousness of his condition, tries to conceal it; he continues to attend to his ordinary business as much as he can, and makes a great effort to appear reasonable. All this time his health is giving way; he sleeps little or none at all; his appetite diminishes; digestion becomes difficult and he becomes constipated, grows thin and his features change.

In females the monthly discharges become scanty and irregular and finally are altogether suspended. The tastes, habits, affections, character and aptitude for business of the patient are completely changed, and he becomes the exact opposite of his former self in all his relations in life and conduct. The duration of this precedent condition may last as long as fifteen or twenty years, but sooner or later this disorder of the cerebral functions becomes more obvious and positive and the patient ceases to strive against it or attempt to conceal it. The symp-

toms of physical change then become more striking and numerous. A febrile excitement pervades the system, the pulse is accelerated, the eyes have a wild and glassy look, the sensations have become either more acute or more obtuse, and he complains of pain, sense of weight and giddiness in the head and ringing in the ears.

Intense heat, cold, hunger and thirst are borne without uneasiness and apparently without consciousness of the fact. He sleeps little, and when he does sleep is apt to have frightful dreams; his muscular power is often inordinately developed; during his waking hours he at times is walking or exercising without cessation, and again seems to be immovable.

In some cases some strong passion displays itself, chiefly by its effect upon the intellect, and then comes intellectual mania. The patient at times keeps his head elevated and his looks fixed on high; he speaks in a low voice or utters cries and vociferations without apparent motive; he walks to and fro, and sometimes arrests his steps as if excited by the sentiment of admiration or wrapped in profound reverie.

The following account will illustrate one of the forms of this disease: A young medical student suddenly conceived the idea that he could obtain a fortune if he attained academical honors. To bring about this desired result, he entered college and studied so hard as to become deranged. Among other vagaries of his disordered mind he insisted that he was the Farnese Hercules; that he had written Dr. Clark's "Travels in Russia" and the *Aeneid* for Virgil; that he had painted one of Raphael's masterpieces, and finally that he knew everything.

What Dr. Guy calls partial intellectual mania is now generally called monomania, and where a patient has taken up some single notion opposed to common sense and personal experience, we see it in its most simple form. As in the case of the man who imagined himself to be secretary to the moon, and while he appeared to be able to converse intelligently upon all other subjects, when the moon was mentioned he commenced instantly to stare and commit great extravagances.

Another curious instance was that of Rev. Simon Browne, who, for many years before his death, entertained the belief that

he had lost his rational soul, though during that time he evinced great ability in his ordinary conversation and in his writings. He discontinued all public and private worship and explained to his friends that as he had fallen under the sensible displeasure of God, who had caused his rational soul gradually to perish and left him only an animal life in common with brutes, it was profane in him to pray and incongruous to be present at the prayers of others. In a book of some merit, which he dedicated to the queen, he speaks of himself as "once a man, and of some little worth; but of no worth now, as his present unparalleled ease makes too manifest; for by the immediate hand of an avenging God his very thinking substance has for more than seventeen years been wasting away, till it is wholly perished out of him, if it be not utterly come to nothing."

Of the poet Cowper it is said that he was "innocent, amiable and pious, yet he lived oftentimes in a sweat of agony, in dread of the Eternal wrath. He could not persuade himself that one so vile as he conceived himself to be could ever partake of the benefits of the Gospel, and thought himself predestined to be damned. Yet he never questioned the loving kindness of God, the perfect rectitude of His Providence, nor the support and joy of His religion to all other men; for him alone there was no assured hope."

Another remarkable case was that of Rev. Daniel Haskell. He was a graduate of Yale College and of the Theological School at Princeton, for eleven years pastor of a church in Burlington, Vt., and finally elected president of Vermont University. While occupying that position he became insane, believing that he had died, been forever condemned, that there was no salvation for him and never could be. Although he held this belief inflexibly up to the time of his death, on every other topic his intellect was clear, strong, correct and active. He was a lecturer much sought after, attractive as well as instructive and a man of great strength and soundness of mind except on that one point. He would sometimes in conversation apparently forget it, but any reference to the subject would at once restore this delusion.

Moral mania is defined by Dr. Guy as consisting "in a morbid perversion of the natural feelings, affections, inclinations, temper,

habits and moral dispositions, without any notable lesion of the intellect, or knowing and reasoning faculties and particularly without any maniacal hallucinations; and partial moral mania as an exorbitant activity of some one passion or propensity and its predominant or complete mastery over every other." As forms of the latter he gives Kleptomania, a propensity to theft, giving the case of the lady well to do in life who was so effected with this mania that she would fill her pockets with bread from her friend's table; Lying; Erotomania or amorous madness; Pyromania or a morbid propensity for incendiaryism; Suicidal monomania and Homicidal mania. These he gives as distinct and indisputable forms of insanity, although he wrote at a time when the existence of moral insanity was only admitted by physicians; when the courts not only did not recognize such a form of insanity but would hardly admit the existence of an insanity which only existed in a perversion of the propensities and moral feelings, and demanded in all cases proof of intellectual disturbance; and, whereas, at one time all forms of insanity were regarded as visitations of God, at that time the courts regarded all forms of moral insanity as instigations of the devil.

In 1886 there was held in Saratoga, N. Y., a conference of eminent alienists and publicists in the United States and Canada for the purpose of adopting if possible a uniform classification of mental diseases. This conference met at the suggestion of the Antwerp Congress, held by the Belgian Society of Mental Medicine in 1885, and the following classification was adopted as a means to secure the best basis for international statistics of the insane.⁹

1. Mania.	{	Acute.
		Chronic.
		Recurrent.
		Puerperal.
2. Melancholia.	{	Acute.
		Chronic.
		Recurrent.
		Puerperal.

⁹ 4 Med. Leg. Journal, p. 209.

3. Primary delusional insanity (monomania).
4. Dementia.

Primary.
Secondary.
Senile.
Organic (Tumors, hemorrhages, etc.).
5. General paralysis of the insane.
6. Epilepsy.
7. Toxic insanity (alcoholism, morphine, etc.).
8. Congenital mental deficiency.

Idiocy.
Imbecility.
Cretinism.

If to this we add Somnambulism, which is unconscious cerebration during sleep, we will have a full and complete analysis and classification of this disease called insanity according to modern scientists and alienists.

§ 147. Considered psychologically.—Considerable attention has been given by writers on insanity to considering mental unsoundness psychologically and so much importance is attached to the subject from this point of view by them that it seems important at this point to call attention to some of the principal claims made by them.

Two of the main difficulties that have attended the classification and analysis of insanity, are, the confusion of the nomenclature, which the Saratoga conference has sought to reduce to the minimum, and the treatment of a symptom as if it was a disease. In this way the mind has been resolved into distinct factors, and it has been assumed that one of these factors may be insane, while the others remain sane. But the true theory for the physician is, with Lord Brougham, to treat the mind as a unit and say that if any of its functions is diseased, the mind is diseased, and if the mind is not diseased none of its functions is diseased.

The mind has been analyzed into three functions, called discrimination, or consciousness of difference, similarity, or consciousness of agreement and retentiveness or memory; but the mind can seldom operate exclusively in any one of these three modes. That derangements of the various faculties are not dis-

tinet, independent diseases is shown by the fact that they occur sometimes alternately, and sometimes successively, when there is true mental disease. The disease may flit, as does neuralgia, capriciously from one function to another; or as is more usually the case, it may begin with a derangement of the perceptive powers, producing illusions and hallucinations, and end with a torpid prostration of these powers producing senile dementia. It may, and frequently does, run through the stages of epilepsy, of illusion, of perverted domestic affections, of mania for killing, stealing or burning, of general frenzy, and at last of exhausted dementia and imbecility.

The great difficulty that arises in properly weighing expert testimony is caused by experts treating these floating symptoms of one disease as if they were independent diseases. There is but one mind to each, although that mind has many functions. There can be but one disease to which psychologically the term insanity can be applied, though this disease manifests itself, often in the same patient in various ways.

These views of the psychologists have caused three hypotheses to be propounded by which the cause, rather than the nature of mental unsoundness has been explained. They are as follows: The psychical theory which is based upon the assumption that the original source of these diseases is the soul, and that it is the soul which originally suffers and imparts (when there is insanity) its malady to the body.

The somatic theory, which, as might be supposed, is the exact opposite of the first hypothesis, for its supporters maintain that the soul, as such, is incapable of originating a disease, but that the occasion of every mental disease is to be found in some abnormal bodily development, and the aberrations of the mind are nothing more than disturbances of some functions of the soul produced by bodily abnormities.

If this theory is correct it would seem natural that insanity would be attended with some abnormal condition of the brain, the seat of the mind; but Doctor Storer says that by post mortem examinations it has been demonstrated that insanity may exist without structural changes of the brain, and that structural changes may exist in the brain without insanity. He quotes

Doctor Bell, at one time superintendent of the McLean Asylum for the Insane, situated in Somerville, Massachusetts, as saying that such examinations of the insane generally present no lesions of the brain; changes indeed there are to be seen, but only those that may have occurred *in articulo mortis*; and also from Dr. Waldo J. Burnett, of Boston, one of the best microscopists, who says, that he had made examinations of the brain of persons who had died in a state of chronic insanity, but had been unable to discover any change of structure whatever, or any sign to indicate that they did not belong to individuals whose minds were unaffected; and Doctor Storer, therefore, concludes that in a great majority of cases insanity is not accompanied with organic cerebral change; that notwithstanding the powerful aid of the microscope, it cannot be demonstrated that the brains of the insane are more liable than those of others to various incidental affections and that there is no direct correspondence between the interior of the skull and mental integrity any more than between the exterior of the skull and the shape and consistency of its contents.

Doctor Reese, on the other hand, asserts that in every case of true insanity there are positive pathological changes produced in the brain, but naively adds that these are often too subtle and recondite to be discovered by our present means of research.¹⁰

The third hypothesis is denominated, the intermediate theory and attributes to the body and the soul alike originative influences in the growth of mental diseases.

The adoption of either of these theories by the courts would relieve the question of criminal responsibility of many of its difficulties. If the psychical theory is correct, insanity is an organic, intellectual lesion and the criminal having no control over his actions could not be held responsible for them and penal discipline or bodily correction could not reform him. If the somatic theory is correct then a criminal is no more responsible for his crime than he is for a malformation of his limbs. He may be prevented from future misconduct but to punish him is unjust and attempting to reform him is hopeless. The intermediate

¹⁰ Reese Med. Jur. p. 562.

theory teaches that insanity (with the exception of idiocy and certain hereditary and organic types) is in a large measure the result of nervous and physical causes, often voluntarily induced, partly by the negligence, and partly by the misconduct of the party himself; and that in such cases by being made the subject of penal discipline it may often be prevented or restrained.

Dr. Andrew Wilson gives the following account of a curious case of dual nature reported by Mr. L. C. Bruce. "The subject was a patient, who, among other mental peculiarities, exhibited a curious duplex state, whereof the chief feature consisted in his speaking at one period, English, and at another Welsh. The English speaking period was associated with mania. His memory for events which had occurred in the English speaking period was good, while he could not recollect anything occurring in the Welsh period. He wrote from left to right with his right hand. When writing with his left hand he produced "mirror writing" from right to left. The Welsh period was marked by the condition known as dementia, and while he was right handed in the English stage, he became left handed in the Welsh. In the Welsh, the man's speech was said to be almost unintelligible, but what could be understood was in the language of this phase of his life, while English was then an unknown tongue to him.

The one stage is described, as regards his mental and physical condition, as the complete antithesis of the other. He was a maniac in the one and a demented person in the other. Mr. Bruce thinks that the mental impressions received during each of his separate phases were recorded in one cerebral hemisphere only.

The independence of the halves of the cerebrum is argued for on the basis that, if they did not act separately, the patient would not have remained ignorant of his Welsh when he assumed the English phase."¹¹

Doctor Wilson, who reports the case, does not, however, accept the views of Mr. Bruce as to the independent parts of the cerebrum.

¹¹ Illustrated London News, April 1, 1895.

CHAPTER XVI.

INSANITY—CONTINUED.

§ 148. Examination of insane.
149. Witnesses in court—Expert and non-expert—Laws of other countries—Lack of opportunity for preparation.
150. Unsuspected insanity—Insanity from injury—Insane vagaries—Physical signs.
151. Transmission of insanity—Heredity of crime—

Testimony in criminal cases.
§ 152. Insane cunning.
153. Criminal responsibility—Motives as a test—Subterfuges — Premeditations.
154. Hypochondria — Hysteria —Melancholia.
155. Capacity of insane—Lucid intervals—Drunkenness.

§ 148. Examination of insane.—In the examination of persons supposed to be insane, no infallible or all comprehensive rule or rules can be laid down but if the examiner always observes the following he cannot honestly be accused of making an insufficient or hasty examination.

First and foremost, remember that the uneducated and the refined; the bashful, timid and retiring and the cunning, insolent and hardened; the eccentric; the victim of fixed ideas, and the lunatic, each requires in the examination a different style of treatment. Let the examiner adapt himself to the character of his patient: if he will not answer his questions let him quit asking them and confine himself to observation only.

Examine the general appearance of the individual, the shape of the head, the conformation of the body, the expression of the countenance, the temperament, the gait and movements, the speech, posture, eyes, etc., and let the examiner note especially the first impression made on the patient by his appearance.

Ascertain the state of the general health, especially of the functions of the organs of digestion, the appetite and the bowels; if there are any disturbances of the motor spheres or of the pulse, and if there is any increase of phosphates in the urine;

if he sleeps well or is disturbed by dreams: or is unusually restless; whether he is very susceptible to heat and cold or the reverse.

Inquire into the history of his family to learn if he has any hereditary predisposition to insanity or if any members of his family have been subject to fits or have shown any marked eccentricity of behavior.

If the mind appears unsound, inquire how long it has been so; from birth or infancy; if later in life, did it follow any mental shock, or long continued anxiety of mind; any severe bodily illness or repeated epileptic fits.

Inquire if the habits of life have been regular or the reverse; if he has indulged in the use of intoxicating liquors or exposed himself habitually to causes of excitement.

Compare the present state of mind with that which existed when he was reputed of sound mind; have his feelings, affections and domestic habits undergone any marked change?

When the inquiry is directed to the ascertainment of the capacity of the mind, inquire as to the patient's knowledge of his family and of the relation in which they stand to him; as to his memory of persons recently seen and of events which have recently transpired.

Does he know his own age? Is he conscious of the lapse of time and can he name the day of the week, the month, the year? Does he know the name of the president or governor and of those persons who are most frequently the topic of conversation? Test his knowledge of the simple operations of arithmetic and of the value of money. Note his power of attention and distinguish carefully between mere negative or affirmative answers to leading questions and such as indicate judgment and reflection.

If the inquiry is for the purpose of ascertaining, not the capacity of the mind but its soundness in other respects endeavor to discover the existence of delusion by conversation directed to those topics which are most likely to interest and excite the mind. If the unsoundness affects the moral feelings rather than the intellect, make the relatives and friends of the patient the subject of conversation. In cases of supposed moral insanity, in-

quire into the motives which may have led to the commission of the act with which he is accused.

The examiner should insist on having sufficient opportunity for forming his opinion and should never be content with a single visit; in cases of difficult diagnosis he should require the patient to be placed for some time under his inspection. In other respects he should make the same investigation he would in case of any other disease.

§ 149. Witnesses in court—Expert and non-expert—Laws of other countries—Lack of opportunity for preparation.—When undergoing examination in courts of law the physician should carefully avoid all definitions of insanity, on the plea that mental, like bodily disease, does not admit of definition but is subject for description; and that diagnosis in most cases must depend upon a comparison of several combined symptoms.

If, however, it is insisted that he should give a definition let him be sure that it is the result of careful and patient thought; one which satisfied his mind in his study. He may depend upon it that if he tries to extemporise a definition it will be a bad one.

Many specific definitions of insanity have been given, such as the following: "Insanity is a disease of the brain, by which the freedom of the will is impaired."¹ Doctor Billings defines insanity as a well-marked disorder of the mental processes, produced by disease of the brain, without loss of consciousness in a person previously sane; this includes mania and melancholia but not idiocy or senile dementia. Many others have been given, but neither in the medical nor legal profession are there any settled rules for determining what will or will not establish insanity in a given case; and when the question of criminal responsibility arises it is still more difficult to define what constitutes such responsibility or to formulate any rule to govern courts or medical experts. It may be said generally, however, that no definition should be so circumscribed as to release from confinement half the inmates of our hospitals and asylums nor so extended as to embrace every eccentricity of character, every unaccount-

¹ Elwell Malpractice, etc. (4th ed.).

able ebullition of passion or estrangement of feeling. There is a middle ground that is right; a point where responsibility ends and irresponsibility begins, and every fact that has a relation to this question is important and valuable. But with the obscurity and doubt which hang over this subject, no one ought to presume to decide with great confidence where responsibility ends.

Mental disorders are of course as numerous and various as the mental constitutions of the insane themselves; and to consider any particular association of them as characteristic of the state of mind called mania, would be only to blend things together that have no uniform nor necessary relation to one another; and would convey no more really valuable information than it would to marshal forth every symptom that has at any time been observed in the countless disorders of digestion, as the symptoms of a disordered stomach. The only use the physician makes of the latter is to refer them as they occur, to some particular derangement of that organ, and thus establish the basis for an appropriate and efficient treatment. There is no reason why the same process should not be pursued in mania; and it is because a different one is more frequently followed, that the common notions of this disease are so loose and incorrect, as not only to be of little service in judicial discussions, but absolutely in the way of arriving at just and philosophical conclusions.

To furnish any light on the subject, it is the physician's duty to analyze the various phenomena of mania, associate them by some natural relations and refer them, as far as his knowledge will permit, to particular faculties.

The mode invariably pursued in investigating this question in this country is by the examination of witnesses, some of whom, and the most useful, from being of the medical profession or employed in the care of the insane, are appropriately fitted to testify. But the examination is not confined to the evidence of such witnesses, for any person may be called to testify, who from association with the supposed insane person is able to form an opinion as to his sanity or insanity.² Indeed it frequently happens that more weight is given to the testimony of such witnesses than

² Clark v. State, 12 Ohio St. 483, 40 Am. Dec. 481.

to that of medical experts or of those engaged in caring for the insane. The only protection against the ignorance, to give it no harsher name, of some of these non-expert witnesses is the ordeal of cross-examination. And yet this is of but little avail, for while a man's memory as to dates and other facts may be severely tested by a rigid cross-examination, and its true value shown, it is a very difficult matter to shake the opinion of a witness which is formed of a great variety of elements, most or perhaps all of which it is manifestly impossible for him to submit to the scrutiny of a jury. If a particular class of men are thought to be the only ones capable of taking care of the insane, why should not their testimony alone be taken on the question of sanity or insanity? True it is that in all important cases the testimony of one or more such witnesses is usually taken, but their testimony may be contradicted by that of those whose very ignorance of the subject renders them confident in forming and expressing an opinion thereon, and a jury is not generally composed of men capable of distinguishing the true from the false in such matters. Of course, an enlightened and conscientious jury will try to be governed by the testimony of those whose business or profession eminently fits them to give their opinions on such subjects. But the jury cannot select their witnesses, and they often have nothing but the most unsuitable testimony submitted to them.

Add to this the still further fact, which, alas, too frequently appears, that such testimony is not the result of impartial investigation, but given by witnesses employed for one side and rebutted by similar testimony, and it is not wonderful that startling verdicts are frequently given.

Under the laws of France, to its credit be it said, such questions are always submitted to the investigation of men trained in the subject, who are called rightly experts, who are allowed ample time to make an examination and report, and, if the report is not satisfactory to either side, further time can be demanded and a still further examination ordered.

In England the attorneys for the government are now under instructions from the Home Office to institute an inquiry in every case in the criminal courts where there is reason to suspect insanity exists or will be pleaded. These inquiries are to be con-

ducted by the judges before trial, by the examination of leading and acknowledged competent medical experts.³

As a contrast to these methods of procedure, especially in the matter of the time allowed for investigation, might be cited the case of Bellingham, who, in the space of eight days after he committed his crime, was, under the then existing practice in England, indicted, tried and hanged, notwithstanding his defense was insanity.

It cannot require a very elaborate argument to prove the superiority of the French and English methods now prevailing in those countries over the ordinary method pursued in this country, which consists in calling upon the medical witnesses for the first time at the trial. Then, too, most of them have very imperfect notions of the disease, and have had little if any opportunity for communication with the accused, and yet they are required to give their evidence, without opportunity for preparation, and are subjected to further embarrassment by the queries of ingenious counsel bent on puzzling and distracting their minds. If any physician, after listening to divers vague and rambling details concerning a person's health, and looking at him across an apartment, without being permitted to ask him a single question or make any examination, should then be required to say on oath whether or not he had inflammation of the lungs or any other of his organs, there can be no doubt that he would frankly say it would be absurd to expect an opinion that would be of any value. And yet this is the ordinary process, where the disease under investigation is insanity.

Where mental derangement is suspected there are many physical symptoms and numerous other circumstances more or less important which cannot be investigated in an hour or a day, but require a course of diligent observation that might well occupy weeks and months before the suspicion could be confirmed or disproved.

§ 150. Unsuspected insanity—Insanity from injury—Insane vagaries—Physical signs.—That insanity has existed in a person without its being suspected is so well established by known cases as to need neither argument nor proof. One of the most remark-

³ 6 Medico Legal Jour. 153.

able instances of it is related by a French writer on this subject, and, as the account shows, although the insanity had existed for years, it was not even suspected until after the man's death. The person was a revenue officer, who exercised the duties of his office for three years in the manufactory of A. & Co., and was only noticeable for his unaccommodating disposition, melancholic temperament and fondness for seclusion. One day, while A was conversing with some of the workmen, this officer requested him to affix his signature to certain papers. A proceeded to his room for this purpose, and while in the act of writing was shot dead by the officer, who immediately killed himself. Among his papers were found several addressed to the advocate-general, bearing the most singular titles, such as "my last reflections" and "my last sighs," in which he declared that he had been poisoned several years before and gave a minute account of the numerous remedies he had ineffectually used, insisting in the same papers that this was no delusion; that he acted deliberately and giving very coherent reasons to prove it. He announced in them that four victims were required for his cure, viz., the two heads of the establishment, a woman who was living in it and his old housekeeper; and that in case he should be content with one, he would leave to justice the charge of obtaining the others. Some of these papers he finished by saying, "Today my pains are less acute—I feel better—my vengeance is retarded," or "My pains are renewed—with them my thoughts of vengeance." Among other wild fancies, he gave a description of the funeral monument to be raised to one of his victims; this was to be a gibbet covered with figures of instruments of punishment. He also described his own funeral procession, saying that he wished the four corners of the pall to be carried by the four persons above named, in case he should not have sacrificed them; that the advocate-general should follow the cortege, and when it reached the cemetery should prepare a large ditch in which he should be buried, together with the four pall-bearers. In another paper he said he had prepared for each of his victims a gilt ball as an emblem of their thirst for gold and their ambition, filled with powdered cantharides in memory of the torments which he suffered. He had never shown any signs of mental alienation in his official letters or reports, and, except for his fits of abstraction and his love for solitude, had no pecu-

liarities, unless it should be that, although apparently well, he constantly complained of ill health. His superiors were so well satisfied with his performance of his duties that they were about to promote him.

In the absence of this written record of his insanity, if he had failed to kill himself after the murder of A, no counsel however ingenious could have successfully interposed the defense of insanity on his behalf; and yet if he had been confined and secluded, time would have fully developed his disease.

Insanity may result from bodily injury or as one of the incidents of physical disorganization, and in such cases it may be a long time before it is developed.

Thus, in 1853, a midshipman in the royal navy fell on Table mountain, Cape of Good Hope, a distance of eight feet, receiving a scalp wound which bled freely, but without causing any fracture, and healed well. Sixteen years afterwards he died, after being insane for two or three years as a result of that wound.

Softening of the brain may continue some time before producing insanity.

Sometimes there will be found in the insane a diminution of sensibility, although more frequently exaltation. Thus one man imagined that he had been killed at Austerlitz, where he was wounded, spoke of himself as dead and said that a machine had been made to take his place.

Another manifested no pain when a pin was passed through the skin of his arm. His mania was that the devil had carried away his body and he no longer felt anything.

Some are not affected by extreme cold and others by extreme heat—that is, so far as any manifestation of feeling is concerned.

Generally they suffer from hunger and thirst, and constipation is almost always an attendant symptom. The skin is usually dry, rough and inactive, and they have a peculiar smell about them. The secretions, and particularly the perspiration, are imperfect in most cases. They urinate a great deal and frequently. The genital functions are ordinarily preserved by the insane, and sometimes their activity is increased, although the disease may not have an erotic origin. Their respiration is sometimes unequal, hurried, interrupted, diminished and sobbing, and the breath is often fetid. Deceptions of the eye and ear generally

characterize the fancies of all madmen; the deliriums of smell are less frequent than those of the other senses; those of taste are of the most various kinds, and those of touch impress the patients with the existence of attributes in bodies other than those which they possess. These deliriums often give rise to fixed ideas, and hence the physician will observe particular postures and various attitudes and motions in all madmen. A change of moral disposition is one of the earliest symptoms; they become extremely irritable, prone to anger, suspicious, fond of concealment, obstinate and perverse.

The physician will see in them a fondness or aversion for particular persons without any apparent reason. Hatred, jealousy, anger, fear, terror, a disgust for life, a desire to destroy and kill will replace the most equable, calm and softest natures. Memory is generally good as to things occurring during the disease, or persons about the patient, but defective or mistaken as to events which occurred previously. Frequently some of the intellectual faculties seem to improve, and in the same patient with madness we see wit, reflection and shrewdness.

§ 151. Transmission of insanity—Heredity of crime—Testimony in criminal cases.—That insanity *may* be transmitted from one generation to another is generally admitted, but that it necessarily *will* be is not admitted. Dr. Maudsley says: "I could not, if I would, in the present state of knowledge, describe accurately all the characteristics of the insane neurosis and group according to their affinities the cases testifying to its influence. The chief concern now with its morbid peculiarities is to point out, first, that they mark some inherited fault of brain organization, and, secondly, that the cause of such fault is not insanity alone in the parent, but may be some other nervous disease, such as hysteria, epilepsy, alcoholism, paralysis and neuralgias of all kinds. Except in the case of suicidal insanity, it is not usual for the parent to transmit to the child the particular form of mental derangement from which he has suffered; insanity in the parent may be epilepsy in the child, and in families where a strong tendency to insanity exists one member may be insane, another epileptic, a third may suffer from severe neuralgia, and a fourth may commit

sueide;" and again the disease will skip generations, until it will seem that it has entirely disappeared.

And, speaking of the transmission of insanity, the following curious instance of the transmission of crime is vouched for by Dr. Steinau: In Dr. Steinau's native town, he tells us in his "Essay on Hereditary Disease," there lived an old man who was such an inveterate thief that he went in the whole place by that name, and when "the thief" was mentioned every one knew who was meant. Children, even in his presence, called him by that name, and he bore it with good-natured forbearance. It was even customary for tradesmen and dealers who frequented this place at the annual fairs to enter into a formal treaty with him whereby, for a trifling sum of money, he agreed not only not to steal their goods, but also to protect them against other thieves. He had a son who was respectably married and carried on a profitable business which supported him handsomely at another town. This son could not apparently help committing many robberies quite without necessity, and merely from an irresistible inclination. He was several times arrested and punished; the consequence was, he lost his credit and reputation and finally died, while still a young man, in the house of correction, where he was confined for his last robbery. His son, grandson of "the thief," in his earliest youth, before he was able to distinguish between good and evil, developed the disposition for stealing and the ingenuity of an expert thief. When only three years old, although supplied with all necessary food, he would steal all kinds of eatables, and, being unable to eat them himself, would distribute them among his playfellows. He would steal his companions' playthings and secrete them for days and often for weeks, with an ingenuity and slyness far beyond his age. At five years of age he would steal copper coins; at six, having learned the value of money, he looked out for silver coins, and in his eighth year he only contented himself with larger coins, and proved himself to be an expert pickpocket. Nobody would employ him or teach him a trade, for he was continually robbing his employers, and in his fourteenth year he was committed to the house of correction for robbery.

Although such cases as the foregoing occur not infrequently,

yet, unless there is hereditary insanity, mere hereditary tendency to crime is not now regarded as any more an available defense for a criminal than that—

“In Adam’s fall
We sinned all.”

It is well settled now that in criminal cases where the defense is insanity evidence may be introduced of the insanity of the family and the ancestors of the accused, and courts have even admitted evidence as to the insanity of the collateral issue of a common ancestor of the accused three generations back. In the case of *Baxter v. Abbott* Judge Thomas, of the Supreme Court of Massachusetts, said on this subject, very properly: “The practice has been to admit evidence of insanity in the family, and it is right in principle. It rests upon the ground of the hereditary character of insanity, and that a predisposition to the disease is frequently transmitted from parent to child. With such predisposition the malady *may* not show itself in the child, for the child may not be exposed to any exciting cause. But, with such hereditary taint, insanity *supervenes from slight causes*—causes apparently wholly inadequate to affect the mind without the predisposition. In making a diagnosis of such a case, we suppose that, among the first questions which would be put, would be whether the parents of the patient were or had been insane. When it is proved that the father or mother had been insane, that *insanity had appeared in them at about the same age, and in the same form, its existence in the child is more probable, and is believed on less perfect evidence.*”⁴

It is, however, not necessary that the insanity of the ancestor should be shown to be notorious or of the same type as that of the accused. It is sometimes so concealed as to escape the knowledge of all but the closest observers; it often changes its form from time to time in the same individual, and when passing from parent to child almost always varies its type. But this evidence of the insanity of an ancestor or ancestors is only what is called in law cumulative evidence; that is, additional evidence on the

⁴ *Baxter v. Abbott*, 7 Gray (Mass.) 71, 81.

same point, and of itself is no defense to crime. Evidence that certain causes might induce insanity is not admissible without laying or offering to lay a basis of proof that insanity actually existed in the accused.

§ 152. Insane cunning.—A book could be filled with stories of the craftiness and cunning of the insane. Sometimes they seem to be able to hide all traces of the disease and are able to deceive those who have spent years in the care of the insane.

A parish officer was taking a lunatic to commit him to an asylum, upon the order of two examining magistrates. As he was a man respectably connected, a carriage was hired and he was persuaded that they were merely going on a pleasure excursion. On the journey something happened which aroused his suspicions as to their destination, as was shown by his subsequent conduct, although he said nothing about it. They arrived at the town where the asylum was located too late in the evening to obtain admission, and therefore went to a hotel and stayed all night. The lunatic arose quite early in the morning, and, searching the officer's pockets, found the order of commitment. Putting this in his pocket, he went out, and in some way finding the asylum, saw one of the keepers and told him he had a mad fellow at the hotel whom he would bring up in the course of the day. He told him that this lunatic was a very queer fellow and had some very odd ways; that he would claim that he was the officer and was bringing him to the asylum, but they should pay no attention to what he said, only take good care of him. He then returned to the hotel, woke the officer and after breakfast readily fell in with the suggestion of the officer that they should take a walk. When they came within sight of the asylum, the lunatic said, "What a fine house that is!" "Yes," said the officer, "and I would like to see the inside of it." "So would I," said the lunatic, and so they walked in. When the keepers appeared, the officer searched in vain for his order of commitment. In the midst of his search the lunatic produced it and said: "This is the man I spoke to you about; take care of him; shave his head and put a straight waistcoat on him." The officer at once protested, but this only confirmed the story of the lunatic, and, finding his protests un-

availing, he became so furious that they soon put him in a straight waistcoat and shaved his head. The lunatic went back to the hotel, paid his bill and drove home again. Of course, his relatives were surprised to see the wrong man come home, and, fearing that he had murdered the officer, asked with some trepidation where he was. "Why," said he, "I left him at the asylum as mad as a fury." And there, sure enough, they found him, and, though not a lunatic, he was a very angry man and was not mollified by the information that he could not be released without a magistrate's order.

In another case, where the patient was afflicted with suicidal mania, a most rigid examination failed to disclose any traces of it. The patient denied that he had any such hallucination, said that he was happy, subject to no depression, was most anxious to live and had a great horror of death. The examining physicians, satisfied that the family had no improper motive in making this charge and asking the investigation, continued to question him, but he answered all their questions readily and cleverly. They then drew his thoughts in another direction and, without seeming to do so, kept watch of his movements, and soon discovered some sort of a weapon projecting from one of his pockets. He saw that they had seen this and immediately said he would have to leave them for a few moments. The doctors told him he could not go until they knew what he had in his pocket. He immediately rushed for the door, but they caught him and, on searching him, found a razor in his pocket. They also found a letter in his pocketbook, directed to the coroner, intimating that he was pursued by an evil spirit, and that this was the cause of his self-destruction.

In another case a patient in an asylum was examined by the proper officers, who, after having engaged him in a long conversation, in which he did not manifest the slightest trace of insanity, ordered his discharge. The papers for his discharge were made out and he was directed to sign his name. He subscribed himself "Jesus Christ" and at once indulged in all the vagaries arising from that delusion.

Yet, notwithstanding this capacity for concealment, the abnormal condition of lunatics will, if they are closely watched,

sooner or later break out. To the manifestation of such abnormal desires, to the free disclosure of tendencies which are generally concealed, may be referred much of the peculiarity which distinguishes the conduct of the insane. Many insane persons are able to *talk* rationally, but cannot *write* without exhibiting their insanity, and it is often advisable to engage in correspondence with alleged lunatics in order to gain a better insight into the workings of their minds. Such a course is eminently proper in criminal proceedings, and especially where it is a question whether the insanity is real or feigned. Not only the contents of such letters, but the style and handwriting may often furnish important tests of insanity.

§ 153. **Criminal responsibility**—Motives as a test—Subterfuges—Premonitions.**—Whether an act was done or a deed committed while a person was suffering from a diseased mind and was not master of himself, is to be determined primarily from the indicia presented by the action itself, and then from the results of an examination of the accused with reference to his physical, moral and mental condition, before, at and after the act or deed in question.

As instances of how insanity may show itself, a man made a bequest to the King of Siam, and another to all the children in a particular parish who should, in a specific year, be born with moles on their faces.

But it must be borne in mind that lunatics often construct, in furtherance of their designs, plans of consistent ingenuity, and, on the other hand, those of undoubted sanity who commit crimes almost invariably leave some loophole in their plans by which they may be detected. A sudden change in a man or woman's course of life and conduct, especially if the crime committed or the course of conduct pursued is outrageous, may properly have great weight in determining the question when making an examination of a supposed lunatic. This is one of the reasons why it is essential to inquire into the former life and history of the patient. His relatives, friends, servants and, above all, his physician, may be able to give many facts on which the examiner

** See also *post*, Chap. XVII.

may base a just conclusion. But he should not be governed by these alone; they may be interested in establishing a certain condition of mind. Public examinations, or those of which the patient has been notified, are entitled to very little weight. Then it is that the sane pretend to be insane and the insane to be sane.

It is sometimes claimed that the absence of a motive for the commission of a crime is a certain indication of insanity. But the absence of a motive may be only the non-discovery of a motive.⁵ Some of the most atrocious crimes have been committed without a discoverable motive until the confession of the criminal revealed it. A desire for notoriety may *prompt* to the commission of a crime, but does not relieve from responsibility. It is well known that those who are *known* to be insane, and confined as lunatics, have been influenced by motives in the perpetration of their crimes. Thus they have often murdered their keepers out of revenge for their treatment of them. When there is other strong proof of insanity the absence of a motive may favor the view of irresponsibility for the crime, but the non-discovery of a motive cannot be taken as proof of a homicidal mania in the accused.

It is safe to say that no act is without a motive, although this may be a sane or an insane motive; and to find the true motive it is generally not only necessary to have an experimental knowledge of the human mind in general, but a special acquaintance with the history of the patient. In studying this question remember that it is rare that the motive for an act is single; it is generally a confluence of motives, for and against the act, precipitated by some trifling disturbance which under other circumstances could and would have no influence. As men are different in their natures, so do particular motives vary in their effects upon different characters. A man might kill another for a real or fancied insult who would never dream of doing so for plunder. To determine whether there exists a motive or not the examiner should place himself as near as may be at the point of vision occupied by the person whose conduct is under investigation. There are *no* dispassionate men, and every man has his idiosyncrasies, which in no way conflict with his sanity. A man may

⁵ Finchim v. Commonwealth, 83 Va. 689, 3 S. E. 343.

have his own notions of what it is unworthy for his son to do, and disinherit him in consequence, or disinherit a relative for a merely imaginary offense, yet here is no proof of insanity, for he has only done what was right from his standpoint.

The law recognizes no lowest point or minimum in crime below which a motive ceases to exist; crime may be committed for small as well as large gains. Nor can the examiner withdraw instinctive passion from the range of responsible motives. The law must threaten and execute punishment and disgrace as the necessary consequences for indulgence in passion. Nor can the examiner, with any safety to the community or any judicial consistency, declare as motiveless those offenses which are stimulated by no other apparent purpose than to outrage law or to inflict pain or disgrace in others. If he does this he exempts from punishment men like the Count of Charleroi, who shot one of his servants for "sport," or women like the fiendish mother, who, after a series of cruelties, shut up her child in a room with a lot of wasps. Such offenses are rightly punishable for two reasons:

First. Because, being what are commonly called motiveless, they cannot be warded off by ordinary precautions. We can guard ourselves against burglars and assassins, but not against the malevolent stranger, who shoots us merely to see us suffer. And,

Second. Because such offenders are great cowards generally, and the fear of speedy and dire punishment is the only wholesome restraint the community has on them.

Exculpatory subterfuges and attempts to escape, if designed before the commission of the offense, tend to show that the offender was conscious of the illegality of the act. But the absence of such subterfuges or attempts to escape does not prove that the act was done with a consciousness of innocence.

The insane often exhibit great shrewdness in devising subterfuges and in escaping from the scene of the crime. But along with this there is generally some insane act which betrays them; as in the case of the father who planned and executed the murder of his children and then fled in his nightclothes and was, of course, speedily captured. Another feature which frequently accompanies insane actions is subsequent obliviousness as to the

entire occurrence. The insane, if they remember their act at all, only remember it as a dream; and the cases are not rare where maniacs, in their lucid intervals, have asked for the very persons whom they have destroyed in their paroxysms. But be suspicious of a man who has *no* recollection of what has occurred, for this is only probable when there is a loss of memory as to the entire section of time during which the crime was committed. Do not be deceived by the man who can remember nothing of his criminal act, but can remember other circumstances occurring during the same period of time.

It is very common for an attack of insanity to be preceded by what is called depression. By this is meant a condition of despondency which continues for a long time, often for years, without developing any real aberration of mind, until a criminal act shows the transition to patent insanity, it being the first decisive symptom, although it is rapidly followed by others. As there is a mania which shows itself rather in insanity of action than of mind, so there may be a state of melancholy without delirium. It is well known that those periods of life when a person passes from adolescence to puberty, from puberty to age and from mature age to the critical period are generally accompanied by a vague weariness, a motiveless fear and an indefinable sadness, which generally is only transitory, but in *some* cases is the commencement of insanity. The heart appears to be the seat of this trouble, but soon there is manifest a complete prostration of all the intellectual powers, and those whose intellects are overbalanced generally commit suicide.

Unlike maniacs from other causes, these generally turn against themselves their fatal homicidal tendencies. The patient feels that his wishes and hopes ought to be realized, and he also feels the impossibility of realizing them. So he makes no effort to realize them, and, consuming his existence in monotonous grief, takes no interest in anything but his own afflictions. Among these may be classed what are known as hypochondriacs, who are harmless or dangerous according as the disease has made little or much progress. With some it does not interfere with the prosecution of their daily business, but with others long brooding on their supposed bodily condition makes them morose, actively hos-

tile to others and finally may develop either suicidal or homicidal tendencies. Thus a man who imagined himself pregnant committed suicide rather than endure the pain of delivery. In such persons their jealous, suspicious, irritable and headstrong characters would furnish an extenuation of their crime if, under the first impulse, they should commit a reprehensible act. They are fond of talking of their supposed maladies and diagnosing their diseases and symptoms with great elaboration to all who will listen to them. Not only do their bodily diseases occupy their attention, but also the mental element of their malady. One of those thus afflicted has described his feelings as follows: "I still continue to suffer constantly; I have not a moment of comfort and no human sensations. Surrounded by all that can make life happy and agreeable, still to me the faculty of enjoyment and of sensation is wanting—both have become physical impossibilities. In everything, even in the most tender caresses of my children, I find only bitterness. I cover them with kisses, but there is something between their lips and mine; and this horrid something is between me and all enjoyment of life. My existence is incomplete. The functions and acts of ordinary life, it is true, still remain to me, but in every one of them something is wanting—to wit: The sensation which is proper to them and the pleasure which follows them. * * * Each of my senses, each part of my proper self, is, as it were, separated from me, and can no longer afford me any sensation: this seems to be caused by a void which seems to me to be in the front of my head, and to the diminution of sensibility over the whole surface of my body; for it seems to me that I never actually reach the objects which I touch. I feel well enough the changes of temperature on my skin, but I no longer experience the internal feeling of the air when I breathe—my eyes see and my spirit perceives, but the sensation of that which I see is completely wanting."

§ 154. Hypochondria — Hysteria—Melancholia.—Hypochondria in its simple and primary forms does not, in the eye of the law, relieve the sufferer from responsibility; but there have been cases of aggravated and complex hypochondria where it was necessary to restrain the patient; and sometimes it is complicated

with other forms of disease so as to deprive the patient of all responsibility.

Hysteria, which is said to attack only females or males having feminine organizations, resembles hypochondria in its mental and moral symptoms, but the nauseous and painful feelings manifest themselves in convulsions, and the alternations between the different states of feeling are far more abrupt. These patients sometimes cherish tenaciously delusions and hallucinations that they have been the subjects of rape or abortion or have become pregnant, and detail the circumstances with such consistency and exactness as to convince those who are not acquainted with the patient's condition that they are stating facts. They are subject to other delusions, such as believing they have lost a hand or an eye or have been poisoned; but however frequently these attacks occur, they rarely produce mania or dementia, and therefore rarely exclude responsibility. Removal from the anxious but harmful sympathies and attentions of the family and placing under good moral control is the best remedy for this disease, which, if neglected, may result in dementia.

Probably the most common form of insanity which has to be dealt with in courts of justice is melancholia, which is defined to be settled and continuous depression. In its higher degrees the morbid feelings are accompanied by distinct imaginings arising from the condition of circumstances surrounding the patient or the pursuits he last engaged in. These imaginings are the cause of self-accusations or of attacks upon others. Such patients see everything in a distorted light; they look upon everything with repulsion and are angered by sympathy. They cannot retire within themselves, for they find everything there clouded with anxiety, doubt and mistrust, and lay the blame on those by whom they are surrounded, whether these are their best friends or others. Their countenances become concentrated and anxious, expressing dullness and stupidity; then follows habitual and sometimes entire silence and slowness of movement, and sometimes immobility. Some think they have committed some crime for which they are condemned here and hereafter, which was the condition of the poet Cowper: others suppose themselves surrounded by spies and invisible enemies. In one case the patient

always went dressed in a rubber coat and rubber boots to protect himself from the Greek fire which he said his enemies hurled at him from the top of a tower so tall that they could see him wherever he might be. Others think themselves ruined, dishonored and betrayed by their friends. There is not a concentration of all the moral and intellectual powers and the attention upon one sad idea, but a general state of sadness and depression which shapes itself in one predominant idea and manifests itself by a crowd of other morbid phenomena.

They believe that the world is in flames or has turned upside down, or some great calamity is about to befall them. Sometimes it seems to them that death is the only thing that will save those whom they love from the most dire disaster. Thus while under this delusion a father is led to destroy his children. A singular circumstance often attending such attacks is that after the patient has determined upon his method of procedure, as, for instance, to kill his children, his insanity seems to leave him or rather there appears to be a lull in the disease. But this is by no means a lucid interval, for the cessation of the disease is only imaginary, not real.

Yet this unsoundness is not to be presumed in criminal prosecutions. The mind's perturbations, the shocks to which it may have been previously subjected, its congenital or hereditary weakness must be proved. But when these are shown in such a way as to establish melancholia as a disease, the calmness which immediately preceded the act must not be treated as proof of a sane design. From insanity this state of lull issued and to insanity it will revert.

§ 155. Capacity of insane—Lucid interval—Drunkenness.—
To make a binding contract does not require a very high order of intellect. Although the contracts of a lunatic or an idiot, except for necessaries, are of no binding force upon him, yet if a man possesses sufficient mental capacity to understand and know what he is doing, unless the contract is manifestly unfair he will be required to perform it. The law does not presume to make a distinction between much and little intellect. So also if a contract is made by a lunatic during a lucid interval, he is bound

thereby, but the party alleging the existence of a lucid interval must prove it.

By a lucid interval is meant a temporary cessation of the insanity, or a perfect restoration to reason. Not every sensible act necessarily indicates a return of sanity, for there are very few lunatics who do not at times do sensible things. Nor is it a momentary cessation of the malady and an immediate relapse into it again. It differs entirely from a remission, which is only an abatement of the symptoms.⁶ It is said that it is only a more perfect remission, for although the lunatic acts and talks sensibly, he is still liable to a recurrence of the attack at any time. And some medical jurists are of the opinion that no person should be held accountable for his acts during a lucid interval. But this cannot be conceded, for if it were we would have to concede that lunacy could not be cured, and that once a lunatic always a lunatic was the law. The law does not require that the proof should show that the cure is so complete that a recurrence is impossible. If a man acts rationally and talks coherently for any length of time, there can be no better proof of a restoration to reason. Of course, great doubt would attach to the reality of this restoration where the length of time was very short. Such lucid intervals are most frequently seen in mania and monomania, occasionally in dementia before it becomes chronic, and never in idiocy and imbecility. To determine the existence of a lucid interval the mind should be tested; the patient ought to be able to describe his feelings and talk of the subject of his delusion without any signs of excitement; and examinations should be made at different times.

Nor does it invalidate a contract that one of the parties is subject to delusions or hallucinations, unless the delusions or hallucinations are connected with the subject-matter of the contract.⁷ An inquest of lunacy, so far as strangers are concerned, is only *prima facie* evidence of insanity, and a discharge from a lunatic asylum is only *prima facie* evidence of sanity.

Where, in a trial for homicide, the insanity of the accused is

⁶ Taylor Medical Jurisprudence, p. 642.

⁷ Church v. Crocker, 7 Ohio C. C. 327.

set up as a defense, the burden of establishing such defense by a preponderance of the evidence rests upon the defendant.

The law presumes every person sane until the contrary is shown, and in a criminal case this presumption of sanity serves the state as the full equivalent of express proof until such time as it is made to appear by a preponderance of the evidence that the defendant was insane at the time of committing the crime alleged against him.

On the trial of A, indicted for the crime of murder, it having been proved that prior to the commission of the alleged homicide he had twice been adjudged insane and committed to an asylum, but was discharged therefrom the last time nearly two years previous to the time of the homicide, counsel for defendant requested the court to give to the jury the following instruction: "Proof of prior insanity throws upon the state the burden of proving the crime perpetrated during a lucid interval. It defeats the legal presumption of sanity and creates a legal presumption of continued lunacy." Held: Such instruction was properly refused.⁸

"Where a person apparently of sound mind, and not known to be otherwise, enters into a contract for the purchase of property, which is fair and *bona fide*, and which is executed and completed, and the property the subject-matter of the contract has been paid for and fully enjoyed, and cannot be restored so as to put the parties in *statu quo* (that is, in the same condition they were in before the making of the contract), such contract cannot afterward be set aside, either by the alleged lunatic or those who represent him."⁹

Where the defense of insanity is interposed to a criminal prosecution, it is proper to instruct that if the defendant is shown to have been permanently insane before the crime, the presumption would be that it continued and existed at the time of the offense, but that by "permanently insane" is meant insanity not due to a temporary cause, such as delirium tremens, fever or the like.¹⁰

There is always a recognized distinction between one who has

⁸ State v. Austin, 71 Ohio St. 317, 73 N. E. 218, 104 Am. St. 778.

⁹ Molton v. Camroux, 2 Exch. 487.

¹⁰ Kellogg v. U. S., 103 Fed. 200.

become a lunatic by a visitation of God and one who has become *non compos* by his own act, *i. e.*, a drunkard.

Drunkenness, although a kind of insanity, avails a criminal nothing as a defense to crime except to relieve him from the implication of premeditated malice or complex fraud or to reduce the crime of murder from first to second degree.¹¹ And yet delirium tremens, although the result or consequence of continued drunkenness, is insanity.¹²

If a person, being in possession of his mental faculties, voluntarily gets into a fit of drunkenness, and during such drunkenness commits a homicide under a diseased mental condition occasioned by the same, he cannot set up said diseased mental condition as an excuse for his act.¹¹

A curious instance of the application of this doctrine in regard to drunkenness occurred in Scotland. Two young gentlemen, who were great friends, went together to the theater in Glasgow and thereafter supped at the lodgings of one of them. They passed the whole night drinking. In the morning they quarreled; one was fatally stabbed and the other tried and convicted of culpable homicide, which is below what we term murder in the first degree. The majority of the judges presiding at the trial were in favor of only a short term of imprisonment; but one of them, Lord Hermand, insisted that he should be transported. "We are told," he said, "that there was no malice and that the prisoner must have been in liquor. In liquor! Why, he was drunk! And yet he murdered the very man who had been drinking with him! They had been carousing the whole night, and yet he stabbed him, after drinking a whole bottle of rum with him! Good God, my lords, if he will do this when he's drunk, what will he not do when he is sober?"¹³

¹¹ State v. Turner, Wright (O.) 20-34; Commonwealth v. Hagenlock, 140 Mass. 125, 3 N. E. 36, 37; State v. Kramer, 49 La. Ann. 766, 22 So. 254, 62 Am. St. 664.

¹² Maconnehey v. State, 5 Ohio St. 77.

¹³ 8 Medico Leg. Jour., p. 217.

CHAPTER XVII.

INSANITY—CONCLUDED.

§ 156. Insanity as a defense to crime. 157. Medical men as witnesses. 158. Criminal responsibility— Test of irresponsibility —Classification of cases —Right and wrong test —Insane delusions—Irr esistible impulse. 159. Moral insanity.	§ 160. Illusions and delusions without insanity—Lack of restraint—Kleptomania. 161. Experts and courts—Evidence. 162. Summary of the law as to criminal responsibility. 163. Feigned insanity.
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§ 156. **Insanity as a defense to crime.**—We come now to consider this disease of insanity as it is discussed in the criminal courts and as it is viewed when set up as a defense to a criminal charge.

Prof. Elwell says that there is not a single writer on medical jurisprudence, or an attorney who sets up the defense of insanity in a criminal case, whose stock in trade is not largely abuse of the courts for their supposed prejudice against this defense, and that the plea always throws suspicion on a case.

Every rascal who commits an outrageous crime pleads insanity as a defense, until even in public prints we find such utterances as this: “The violent and blood-thirsty members of society should be put out of the way of further outrage without reference to the motive which induced them to disregard the right of life and property; the laws of man should be administered in the same spirit as are administered the laws of nature—a short sighted man who has miscalculated his distance in attempting to swim a river, drowns; not because his motive is malignant, but because he has violated a law. Insanity, like blindness, or a ‘wicked and abandoned heart,’ is a defect of organization, and the highest triumph of human tribunals should be to administer to the survival of the fittest.”¹

This is the furthest extreme on one side of the question. The writer does not agree with the foregoing any more than he

¹1 Medico-Legal Jour., p. 218, 219.

agrees with the late Col. Corkhill, who will be remembered as the district attorney who prosecuted Guiteau, when he says, "Insanity should never be allowed as a defense for crime on the trial of the prisoner under the indictment." By which he means that whenever insanity is the defense, this question alone should be first tried, and if found in the prisoner's favor, he should be confined in what may be called an insane prison for a length of time commensurate with his crime.¹ This would be well enough if the prisoner was insane at the time of the trial as well as at the time of committing the offense, and then he should be confined until he is cured. But suppose he was insane when he committed the crime and sane when placed on trial? He should be allowed to prove that as any other fact; he is presumed to be sane; the burden of proving his guilt is on the State; he assumes the burden of proving his insanity. If he can prove it, let him go acquit. But the law should regulate the manner of proof; it should require the experts to be so in fact as well as in name; men fitted by experience and education to give an opinion upon the subject. The law should not allow every man who has a "theory" to come into court to air his theory and confuse the jury. How these experts should be selected the writer is not now prepared to say further than that they should be selected by some person or body competent to decide upon their merits. If the man was really insane at the time of committing the crime he is innocent, and ought not to be punished.

In some other matters Col. Corkhill's views on this subject of insanity are right. As, for instance, in his views of the proper plea to be made in some cases where the plea of emotional insanity is set up as a defense. Thus, if a man has a provocation which we all recognize as justifying him in slaying another, who has done him or his an infamous wrong, let him not plead emotional insanity, but that he did what was right; that any of us would have done the same thing, and that no jury ought to find him guilty when he rid the world of a brute whose only resemblance to a man was his outward appearance. In most of

¹ 1 Medico-Legal Journal, pp. 218, 219.

such cases, we all know that the plea of "emotional insanity" is not the true plea: that it is only to give the jury a fiction on which to base their verdict on. It would be better to let them base their verdict on the right of every man to rid the world of such vermin.

As giving what seems a true view of insanity as a defense to crime, the following portion of a charge given to a grand jury by Chief Justice Parker, of New Hampshire, seems pertinent. He says: "The public papers in giving reports of trials often say, '*the defense was, as usual, insanity,*' or make use of some other expression indicating that this species of defense is resorted to, in desperation, for the purpose of aiding in the escape of criminals from justice. Such opinions are propagated in many instances by those whose feelings are too much enlisted, or whose ignorance respecting the subject is too great, to permit them to form a dispassionate and intelligent judgment, and they have a very pernicious tendency, inasmuch as they excite the public mind; and the unfortunate individual who is really entitled to the benefit of such a defense, is thereby sometimes deprived of a fair and impartial trial. They tend to make the defense of insanity odious; to create an impression against its truth in the outset, and thus to bias the minds of the jury against the prisoner, and to induce them to give little heed to the evidence, in the very cases where the greatest care, attention and impartiality are necessary for the development of truth and the attainment of justice. All concur in the doctrine of the law that for acts committed during insanity and induced by it, the party is not responsible; that when the criminal mind is wanting, when, instead of being guided by the reason, which God bestowed, the individual is excited and led on by insane fury and impulse, or by the aberrations of a wandering intellect, or a morbid and diseased imagination or a false and distorted vision and perception of things, punishment should not follow the act, as for an offense committed; that when the faculty of distinguishing between right and wrong is wanting, the individual ought not to be held as a moral and accountable agent. As well, nay, much better might we, as was formerly done in France, institute prosecutions against the brutes for offenses

committed by them, and hang a beast for homicide, as to prosecute and condemn a human being who is deprived of his reason; for in such a case there is no hope of a restoration to a right mind, and a reinstating of a fellow citizen, who has been once lost to the community, in the rights and affections of humanity. But if we imbibe the idea that instances of insanity are very rare—that derangement exists only where it manifests itself by incoherent language and unrestrained fury—that the defense when offered is probably the last resort of an untiring advocate who, convinced that no real defense can avail, will not hesitate to palm off a pretended derangement to procure the escape of his client from merited punishment—if in this way we steel our hearts against all sympathy and our minds against all conviction, it is of little avail that we agree to the abstract proposition that insanity does in fact furnish a sufficient defense against an accusation for a crime. There are undoubtedly instances where this defense is attempted from the mere conviction that nothing else will avail—cases in which the lawyer forgets the high duty to which he is called and excites a prejudice against the cases of others, by attempting to procure the escape of a criminal under this pretense; but such cases are truly rare and usually unsuccessful.”²

Most of our courts regard this defense, when properly made, as Judge Parker did, and if it is a real and not a trumped up defense, there will be no outcry against it or hindrance thrown in the way of the defendant.

§ 157. Medical men as witnesses.—Notwithstanding a Lord High Chancellor of England once said, during the trial of a cause before him involving the question of insanity, that “His experience taught him there were very few cases of insanity in which any good came from the examination of medical men. Their evidence sometimes adorned a case, and gave rise to very agreeable and interesting scientific discussions; but after all it had little or no weight with the jury;”³ and the further fact that generally insanity may be established by the evidence of

² Elwell Malpractice, etc. (4th ed.), p. 364.

³ Elwell Malpractice, etc. (4th ed.), p. 374.

others than medical witnesses, if they have had an opportunity to be familiar with the habits and actions of the alleged insane person, it is *well settled* that the courts and juries do look to the medical witnesses to enlighten them on this question, and place their main reliance upon them. *Their* influence and the weight of *their* opinions are increasing every year, and in view of this fact, it is well for the medical profession to heed Dr. Reese, when he says to them that "There is assuredly no more important or responsible position in which any medical man can be placed, than when called to be examined before a legal tribunal in a case of alleged insanity. Nor is there any duty so difficult to perform, without special preparation by a cautious and diligent investigation of the individual case and a full knowledge of its history, etiology, symptomatology and, in short, its pathological phenomena, with the periods and order of their development, together with all the morbid perversions, intellectual, moral or instinctive, which he can observe or otherwise authenticate. Nor should an opinion ever be given by a medical man, in any doubtful case on a cursory or brief examination, nor without such special preparation, and repeated interviews as will protect him from his double liability to imposition and error. Insanity may be, often is, so skilfully feigned as to deceive the most careful; while where it exists, it is sometimes adroitly concealed by the ingenuity and artifices which insanity itself can alone invent, and which none but professional experts can readily detect, and these only after oft repeated examinations and by constant vigilance and skill. From these facts the medical profession should be strongly impressed with the complicated difficulties and fearful responsibilities involved in such professional duties."⁴

Advanced as the knowledge of insanity is at this day, beyond what it was only a few years ago, yet when this subject is investigated it will be found that there is much to learn. Therefore when medical men are called as witnesses where this question is under investigation, they should not claim to know all that can be known; it would not avail them or their cause any,

⁴ Elwell Malpractice, etc. (4th ed.), p. 372.

for nobody would believe them. They should not hesitate to admit that there is much to be learned in regard to insanity by the medical profession; and always base their opinions upon their knowledge, and not on their theories or sympathies.

As an instance of the gross ignorance on this subject once existing, Mr. Justice Tracy, in 1723, proceeding upon the then accepted theory that the derangement must be total in its character; manifesting itself in wild, ungovernable and incongruous actions, or in stupid imbecility, and that a person could not appear like other men in most or many respects ordinarily, and yet be insane on some particular matters, said: "A man, to be insane, must have no more reason than an infant, a brute or a wild beast."⁵

Not until the trial of Hadfield for shooting at King George the Third, in 1800, was it admitted by the courts that a person might be insane or deluded on one subject and apparently sound and regular—having a knowledge of right and wrong—in all others. In the course of Erskine's argument for the defendant in that case, he said: "The most difficult cases are where reason is not wholly driven from her seat, but distraction sits down upon it along with her, holds her trembling upon it and frightens her from her propriety. Such patients are victims to delusions of the most alarming description, which overpower the faculties and usurp so firmly the place of realities as not to be dislodged or shaken by the organs of perception and sense."⁶ His defense was successful and Hadfield was acquitted on the ground of insanity.

§ 158. Criminal responsibility—Test of irresponsibility—Classification of cases—Right and wrong test—Insane delusions—Irresistible impulse.—The essential conditions of responsibility in criminal cases are, a consciousness of having committed an offense, and a perfect freedom of the will, by means of which there exists the power of choosing between good and evil. Do not understand from this that the freedom of the will is affected merely because the same inducements produce different deter-

⁵ Arnold's case, 16 Howell State Trials 695.

⁶ Rex v. Hadfield, 27 Howell State Trials, 1281.

minations in different men, or in the same man at different times. Defective education, or a long indulgence in evil practices, may produce an habitual proclivity to evil, and render the individual in a popular sense a slave to his passions, without however in any way abridging his moral liberty, so as to take away any of his moral responsibility. To have this effect, the impairment of his freedom must not have been his own act, but have resulted from external restraint or from the influence of disease or of some other abnormal cause.

Two conditions are ordinarily required to constitute the freedom of the will which is essential to responsibility, viz.: a knowledge of good and evil, and the faculty of choosing between them. The faculty or power of choosing between them is the one most closely allied to moral liberty; for this is only impaired when the man is constrained to choose evil against his wishes and endeavors. It very seldom occurs that the actions of the insane are involuntary, that is, are performed without the exercise of any will at all. They may do—and feel perfectly free to do or not—what seems to them to be good; and though they may believe that to be good which is really evil, yet so long as they can act according to the suggestions of their intellectual powers, so long their will continues free. And though knowledge of good and evil may not be a condition of free will, it is none the less essential to responsibility for the acts committed. The knowledge of good and evil requires:

First. That knowledge of one's self by which a person recognizes his personal identity and refers his acts to himself.

Second. A knowledge of the nature and consequences of the act itself.

Third. A knowledge of the relation of the act to man and measures, and

Fourth. A knowledge that the act is prohibited either by moral or statute law.

Whenever this knowledge is taken away or diminished by disease or other abnormal causes, just so far is responsibility taken away or diminished. The power of choosing between good and evil implies a power to throw off all constraints outside of or within ourselves.

Wrong views and opinions which lead men to crime are not sufficient to take away their responsibility unless they so affect the mind that they are not aware that the criminal act is contrary to the laws; either believing it is permitted by the laws or distorting its legal relations. Religious or political fanaticism may lead a man to destroy an obnoxious individual, under the belief that he is doing God's service or benefitting his country, without his forgetting for a moment that he is committing a crime and without relieving himself from responsibility: while insanity giving rise to the same notion would also deprive the intellect of the power of discerning its true relations to the law.

The existence of hallucinations would rather indicate a disturbed than an insane mind, and might signify the commencement of the disease. Men whose consciences upbraid them, although there can be no doubt of their sanity, are often subject to hallucinations, whose vividness makes them seem real.

It does not necessarily follow, because a person can distinguish good from evil, that therefore his will is free, and he is responsible, although that is a good test of responsibility. The true principle is, to look at the personal character of the individual whose responsibility is in question; the grade of his mental powers; to the notions by which he is governed; to his views of things, and finally to the course of his whole life and the nature of the act with which he is charged. A person who commits a crime may be perfectly well acquainted with the laws and their prohibitions, and yet labor under alienation of mind. He may know that homicide is punished with death, and still have no freedom of will. Thus Hadfield, who shot at King George, said he did not intend to injure the king, as he knew that the *attempt* to shoot him was punishable with death and he wanted his own life taken, and yet he was acquitted as insane.

Much has been written and said to prove that a man who is insane on any subject is totally irresponsible, which is the other extreme to which the pendulum of thought and reasoning swings, when released from the old idea that a man must be totally insane, that is, a raving maniac, in order to be irresponsible. Lord Broughman laid great stress upon the fact that the mind must be regarded as a unit and not separable into parts, and that

the least beclouding of the mind affected the whole mind, and, as we have seen, this is a proper *medical* view. But however ably this may be argued and defended it is not accepted as correct by the *legal tribunals* of this country. *They* insist that the accused must be insane in respect to the very act which he is charged with committing.⁷

If a man could be insane upon every subject except the very one giving rise to the crime committed by him, he would certainly be held accountable for that act; and, on the other hand the man who believes that his legs are made of glass might be justifiable in killing a man who threatened to strike his legs with a stick, for to him it would have all the appearance of self-defense.

Lawyers and physicians mean two different things by the word "madness." A lawyer means conduct of a certain character. A physician means a certain disease, one of the effects of which is to produce such conduct.⁸

The question in all criminal cases is in reality not insanity, but irresponsibility, which should be defined by the highest judicial authority in a State. Experts do not form such authority, because only individual experts, and not the whole body of experts, are called in each case; and because the facts in the case are not submitted to a body of experts selected to hear the testimony and arguments and then decide the question; and lastly and more especially, because in criminal cases, frequently only those eccentric and exceptional experts are called, who believe in some wild theory which may help out the criminal's case.

Nor is a jury in reality any better fitted to settle this question of responsibility or irresponsibility. They are not selected with any view to their especial acquaintance with this subject or, in fact, for their especial acquaintance with any subject, and their verdicts are of comparatively little importance in determining what the law is on the subject of insanity. In one case they will convict when the evidence of insanity is clear, and in another they will acquit where the court charges them that

⁷ United States v. Ridgeway, 31 Fed. 144; Bouvier Dictionary *s. n.* "Insanity."

⁸ Stephens' Criminal Law, p. 87.

the defense of insanity has not been made out. The only proper way to determine the law on this subject is to examine the judicial opinions in the various cases, whether this appears in instructions given to the juries or otherwise, always remembering that each case is to be viewed in the light of its own particular facts and cannot be regarded as laying down a universal judicial code, inflexible and applicable to all cases.

Where a defendant does not claim to be afflicted with mania or homicidal insanity, but does claim to be unable to distinguish right from wrong, the court is bound to tell the jury that the question for their decision is whether he labors under that incapacity or not.

On the other hand, if the defense is homicidal insanity the court should instruct the jury that in order to acquit, they must find the homicidal impulse was uncontrollable.

The question in its practical consideration involves an investigation of the cases in which it has been held that there was no moral responsibility, and upon such investigation we find the following classes of cases:

First. Where the defendant is incapable of distinguishing right from wrong, having reference to the particular act committed by him, including those suffering from general mania or idiocy.

This has been the leading test of responsibility in England since 1843, when the question of what must be established to relieve the accused from responsibility was submitted to fifteen eminent judges for determination. They said: "The jury ought to be told in all cases that every man is presumed to possess a sufficient degree of reason to be responsible for his crimes, until the contrary is proved to their satisfaction, and that to establish a defense on the ground of insanity, it must be *clearly proved*, that at the time of committing the act, the party accused was laboring under such a defect of reason from disease of the mind, as not to know the nature and quality of the act, or if he did, that he did not know he was doing what was wrong."

It was and is urged against this "right and wrong theory," as it is called, that it is not broad enough to cover all cases,

even though it is not always rigidly applied. There may be cases where there is an insane delusion, from which the crime emanates, and being at the time insane the accused is forced to the act, by an irresistible impulse; here no responsibility for the act can attach, although the accused knows that the act is forbidden by law. And yet no general theory will be found applicable to more cases, where the question of criminal responsibility is concerned, nor where, upon the test thereby laid down, more equal and exact justice will be done than by this same "right and wrong" theory; and it is no objection, that like all general rules, it has exceptions, which recognize criminal irresponsibility even when there is a knowledge of right and wrong.

The determination of the question of criminal responsibility by the answer to the question as to the ability of the accused to distinguish between right and wrong in the commission of the act with which he is charged, first enunciated by the English judges in 1843 after the trial of *McNaghten*, was at that time justly regarded as a great advance, and as providing a shield for those who committed crime without the necessary criminal intent. And for a long time this was the only rule followed by the courts in this country and in England and was the test given to juries to be applied by them in each case; and it is now the generally accepted rule in the courts for the determination of the question of criminal responsibility. But with improved knowledge on the subject, this rule has ceased to be satisfactory to *physicians* and *alienists* for the reason that they regard insanity from a different standpoint than the lawyers, and have sought in every way they could to bring about a different and more liberal rule, by which to test this question. Regarding insanity as a disease, they have claimed that no one test can be applicable in all cases; that whether a man was insane when the act was committed is a fact to be determined by the jury in each case from all the evidence, and not merely to be tested by a rigid rule of law. That a better test than the right and wrong test would be that suggested by Baron Bramwell in the *Dove* case, "Could he help it?" Undoubtedly this discussion has had considerable effect not only on legislation but on the decisions. Thus the German code provided that

"there is no criminal act when the actor at the time of the offense is in a state of unconsciousness, or morbid disturbance of the mind through which the free determination of his will is excluded;"⁹ and in at least one of the decisions in this country¹⁰ the right and wrong test was wholly disregarded as decisive, as will appear from the decision, which is as follows:

"The capacity to distinguish between right and wrong, either abstractly or as applied to the particular act, as a *legal test* of responsibility for crime, is repudiated by the more advanced authorities, legal and medical, who lay down the following rules, which the court now adopts: where there is no such capacity to distinguish between right and wrong, as applied to the particular act, there is no legal responsibility; where there is such capacity, a defendant is nevertheless not legally responsible, if, by reason of the *duress* of mental disease he has so far lost the *power to choose* between right and wrong, as not to avoid doing the act in question, so that his free agency was at the time destroyed; and at the same time, the alleged crime was so connected with such mental disease, in relation of cause and effect, as to have been the product or offspring of it *solely*.

"The same rule applies to delusional insanity, and necessarily conflicts with the old rule laid down by the English judges in McNaghten's case, that, in case of delusion, the defendant 'must be considered in the same situation as to responsibility as if the facts with respect to which the delusion exists were real.'

"The existence or nonexistence of the disease of insanity, such as may fall within the above rule, is a question of fact to be determined in each particular case by the jury, enlightened if necessary by the testimony of experts."

A careful reading of the opinion of the judge in this case shows that it depends mainly for its support upon the views expressed by writers on medical jurisprudence, who in most cases write from the standpoint of the physician; and that the

⁹ Code of Germany, § 51; 9 Encyc. Brit. (9th ed), p. 112.

¹⁰ Parsons v. State, 81 Ala. 577.

authorities cited from the decisions of other courts are mainly criticisms of the rule or attempts by words rather than by principles to escape a strict application of the rule in a particular case. It may be that the right and wrong test ought to be repudiated, as this case declares it is, but the dangers to the insane are not so imminent from the criminal courts as this learned judge would seem to think. And this case does not state the law as it is announced by the great majority of the courts in this country and in England.

The object of punishment is retribution, prevention or example. Where there is no sin, there ought not to be any retribution. And where there is a knowledge of right and wrong we may prevent and at the same time furnish an example, by holding to accountability.

In cases which fall within the exceptions to the general rule or test, there should be applied such rules of decision as will combine justice and humanity either by conceding diminished responsibility, such as sometimes allows drunkenness to reduce murder to manslaughter; or by confinement, prevent such persons from preying upon the community.

The second classes of cases are these: Where the accused is acting under an insane delusion as to circumstances which, if true, would relieve him from responsibility for the act; or where his reasoning powers are so depraved as to make the commission of the particular act the natural consequence of the delusion.

The question as to criminal responsibility in such cases was also submitted to the fifteen judges, and their answer was as follows:

"This must of course depend on the nature of the delusion; but supposing that he labors under a partial delusion only and is not in other respects insane, he must be considered in the same situation as to responsibility, as if the facts with respect to which the delusion exists, were real. For example, if under the influence of his delusion, he supposes another to be in the act of taking his life, and kills him as he supposes in self-defense, he would be exempt from punishment. But if his delusion was, that the deceased had inflicted a serious injury

upon his character and fortune, and he killed him in revenge for such supposed injury, he would be liable to punishment."

This view of the law is undoubtedly correct when qualified by saying that there should be facts and circumstances showing that the accused had reasonable grounds for his belief, to be determined in view of his condition.

And the relative characters, as individuals, of the deceased and the accused may be considered; and in determining whether the danger was really imminent or not, the inquiry may be made whether the deceased was bold, strong and of a violent and vindictive character, and the accused much weaker and of a timid disposition.

But those delusions must be objective, *i. e.*, visual or affecting some other of the senses, as distinguished from subjective, *i. e.*, relating to matters of personal duty. They must go to the crime itself and involve an honest mistake as to the object at which the crime is directed; as where one kills another under the delusion that he is a robber. It is not essential that actual danger should have existed, but the danger must be estimated from the standpoint of the accused. The logical statement of this proposition is:

a. Objective delusion exempts from punishment the perpetrator of an act committed under its influence.

b. The belief, unfounded in fact, that a person is in immediate danger of mortal injury from another; or any insane delusion which deprives the act of guilty consciousness is such a delusion.

c. Therefore, a party committing homicide under such a delusion is not liable to punishment, or rather, to such punishment as is inflicted upon persons of sound mind.

Thus if the accused believed that the person he had killed was an animal or an inanimate object, he certainly could not be held responsible as a criminal. But, on the other hand, "no imaginary inspiration to do a personal or private wrong under a delusion or belief that some great public benefit will flow from it, where the nature of the act done and its probable consequences, and that it is in itself wrong are known to the accused, can amount to that insanity which in law disarms the act of criminality.

"If such were not the true notions of legal insanity, life, property rights, public and private, would be altogether insecure, and every man who, by brooding over his wrongs, real or imaginary, works himself up to an irresistible impulse to avenge himself, his friends or his party, would become, with impunity, a self-elected judge, jury and executioner in his own case, for the redress of his own injuries or the imaginary wrongs of his friends, his party or his country. But, fortunately, the law is otherwise, and whenever such ideas of insanity are applied to a given case as the law (as too often they have been), crime escapes punishment, not through the legal insanity of the accused, but through the *emotional* insanity of courts and juries."

The following is an extract from the charge of Judge Davis in the case of *The People v. Coleman*, which was tried in New York while the Guiteau trial was in progress, and was said to have been intended not so much for the case then being tried by Judge Davis as for the Guiteau trial. It is perhaps put in stronger language than usual, but is a correct and succinct statement of the law which should govern in such cases:

"Subjective delusions, unless insane, do not relieve from criminal responsibility. If the accused has reason enough to dispel the illusion or correct it and refuses to listen to arguments calculated to dispel it, but cherishes it and makes it a pretext for committing wrong to others, he is responsible. A sane man who kills his child under the stress of a supposed revelation is undoubtedly responsible for his acts.

"Many hundreds of men whom we all recognize as perfectly sane are subject to delusions, or, in other words, have 'fixed ideas,' but in all these cases they have reason sufficient to conquer these delusions whenever it is necessary to avoid public censure. When they feel that they are beyond the reach of the law they indulge their caprices, but when they feel the pressure of the law these delusions are restrained."

In cases of delusion the first inquiry is, "Is the delusion the residuum of a prior insane state?" If the answer to that is, that while delirium has passed away, the old disease still shows itself in the havoc it has made, this is not a restoration of sanity. The mere presence of the delusion does not prove the continua-

tion of the insane state; but the harboring of it does, when the patient has not power to throw it off.

Such delusion, instead of being the residuum, may be the premonition of insanity. Those who have an hereditary disposition to insanity, hypochondriacs and some others are apt to be subject to delusions which present a strong presumption of the coming on of insanity.

Where the defense is that the crime was committed under the influence of an insane delusion, the State will be permitted to show that, notwithstanding the delusion, the accused was sane, or that the crime was not the immediate product of the delusion. Thus the merchant Scarber was convicted of cheating by false pretenses and false weight, notwithstanding the proof that he was possessed of the insane delusion that he was the legitimate son of Duke Charles of Mecklenburg Strelitz.

The third class of cases is: Where the accused, being insane, is forced by a morbid and irresistible impulse to do the particular act.

“Irresistible impulse” is not moral insanity, nor does it mean a passionate propensity, however strong, in persons not insane.

Indeed there is no criterion by which to determine exactly what constitutes “irresistibility.” If a man has reason sufficient to deplore a criminal desire, and power enough to prevent its gratification, the law holds him responsible if he does not take such steps. While “irresistible impulse,” the mind being sane, is no defense to crime, yet violent passion is to be taken into account as a mitigating element and the peculiar temperament of the offender is to be gauged, for the purpose of estimating whether the provocation was such as to create hot blood, and whether there was adequate cooling time. The case of Dr. Webster, who was hanged in Boston for the murder of Dr. Parkman, would have afforded an illustration of this last principle, if he had admitted instead of denying the crime. Those who knew Dr. Parkman, and what an exasperating and overbearing man he was, were of the opinion that if Dr. Webster had told all the circumstances of that last interview, he would not have been found guilty of murder in the first degree.

A sane person may from epilepsy or from prior insanity or

from nervous or physical derangements or from hereditary taint be peculiarly susceptible to excitement. Hence evidence thereof may be given to lower the grade of the offense although not proving insanity.

Many instances might be adduced to show the coexistence of the knowledge that an act was wrong with its commission under circumstances which preclude the idea of responsibility. Thus John Billman, who was confined in the penitentiary of Pennsylvania for horse stealing, murdered his keeper in an especially brutal manner, in order that he might escape. He was not successful the first time he tried to kill him, but after his successful attempt, he changed clothes with the murdered man, put him in his own bed and walked out of the prison, speaking intelligently to the gate keeper as he passed into the street. He was speedily captured, and upon examination was found to be insane, and sent to an asylum. When Martin set fire to York Minister, the affair was discussed by the inmates of a neighboring lunatic asylum and one of them was overheard to say that they wouldn't hang Martin because he is "one of us."

The unsoundness of mind or insanity which we are now considering must be such as to create an uncontrollable impulse to do the act charged by overriding the reason and judgment, and obliterating the sense of right and wrong as to the particular act done, and depriving the accused of the power of choosing between them, or it will not come within the legal definition of irresistible and relieve the accused of responsibility.

§ 159. Moral insanity.—The subject of "moral insanity," so-called, has excited a great deal of attention and all within a space of a few years comparatively. In 1838 it was said by a writer on the subject of insanity, that moral insanity was not yet recognized in courts of justice, although during the same year the superintendent of the State Lunatic Asylum at Worcester, Mass., reported¹¹ that he was "satisfied that at least one-fourth of the cases of mania committed to the asylums by the courts belonged strictly to the class of moral insanity."

¹¹ 20 American Jurist (2 Cushing) 116.

In 1854 Dr. Guy said "moral insanity, which is one of the most important forms of this disease, is as yet unrecognized by law." He quotes with approval Pritchard's definition of moral insanity as a "morbid perversion of the natural feelings, affections, inclinations, temper, habits and moral disposition, without any notable lesion of the intellect, or knowing and reasoning faculties, and particularly without any maniacal hallucinations."¹²

Dr. Beck, in 1850, spoke of moral insanity as a disputed form of mental disease, and says: "It has professedly been adopted because physicians have not been able to detect any delusion or hallucination in the person affected. The intellectual faculties appear to have sustained but little injury, but the feelings and affections are perverted and depraved, and the power of self government is lost or greatly impaired."¹³

In 1856 Dr. Taylor said: "Most medico-legal writers admit that insanity is not necessarily confined to the intellectual powers, but that it may also show itself without decided intellectual aberration in the feelings, passions and emotions. Thus it may appear under the form of a causeless suspicion, jealousy or hatred of others, especially of those to whom the individual ought to be attached, and it may also manifest itself under the form of a wild, reckless and cruel disposition. This is what has been called by Dr. Pritchard 'moral insanity,' to distinguish it from the other form which affects the mental powers directly, viz.: 'intellectual insanity.' It does not appear probable, however, that moral insanity exists or can exist in any individual without greater or less disturbance of the intellectual faculties. The mental powers are rarely disordered without the moral feelings partaking of the disorder; and conversely it is not to be expected that the moral feelings should become to any extent perverted without the intellect being affected; for perversion of the moral feelings is generally observed to be the result of disturbed reason. The intellectual disturbance may be sometimes difficult of detection, but in every case of true insanity it is more or less present, and it would be a dangerous rule to pronounce a

¹² Guy Forensic Med. 306.

¹³ 1 Beck Medical Jur. 722.

man insane, when some evidence of its existence was not forthcoming. The law hesitates at present to recognize moral insanity, at least in civil cases, hence, however perverted the affections may be, a medico-jurist must look for some indications of intellectual disturbance, *i. e.*, of disturbed reason.”¹⁴

In 1881 Prof. Elwell wrote of it as “that specious and dangerous form of insanity or sentimentality known and dignified by the name of moral insanity.” And the same author said: “Its most earnest advocates define it as a state of mind where there is no illusion, nor disease of the intellect unless it may arise from an inscrutable disease of the brain, but in which there is simply a perversion of the moral sentiment; the individual laboring under an impulse to perform certain extravagant and outrageous acts, injurious to himself and others, such impulses being irresistible, so that he is to be held as no more responsible for his acts or conduct than an ordinary lunatic or infant.”¹⁵

And in 1882 Prof. Wharton said: “Moral insanity, which is to be distinguished from insane irresistible impulse, from transitory mania and from occult insanity, has psychologically no existence and is not by law a defense to an indictment for crime.”¹⁶

And the *American Journal of Insanity* says: “Almost any man may satisfy his mind, if not his conscience—a sane man perhaps the more readily—that he has been surprised into a crime by some strange and irresistible impulse, some demoniacal instigation, some fatal propensity, or some unaccountable frenzy, that he could not master on account of its suddenness and force. Such casualties may be, and doubtless are; but God only can judge of them. Human laws cannot; their nicest refinements are too gross for such subtleties. Besides, much of moral insanity, in the popular understanding of the term, is the want of discipline, and of habitual self-control—nature uneducated and unchecked is, or very soon becomes, the spirit of Cain—

¹⁴ Taylor Medical Jur. 626.

¹⁵ Elwell Malpractice, etc. (4th ed.), 400, 401.

¹⁶ 1 Wharton and Stille Medical Jur., § 163.

a propensity to do something wrong. But this is simply the result of habit, not absolutely uncontrollable.”¹⁷

The Supreme Court of Ohio has said: “There is no authority for holding that mere moral insanity exonerates from responsibility,”¹⁸ and the Supreme Court of Missouri has said: “It will be a sad day when uncontrollable impulses shall dictate a rule of action for the courts.”¹⁹

The writers who have urged the plea of moral insanity on behalf of criminals of every grade, maintain that the instances of moral depravity, and especially the examples of the most hideous crimes, are so many evidences that moral insanity exists; and that the parties are thus depraved because of this malady. Unlike Heinroth, who maintained that all insanity originates in vice, they assume that all vice has its origin in insanity and that the commission of a crime is *prima facie* evidence of moral insanity.

§ 160. Illusions and delusions without insanity—Lack of restraint—Kleptomania.—There may be illusion, delusion or a morbid habit of thought, without real madness. If the illusion of sense is conjoined with the loss or a defect of the comparing power—of reasoning upon his delusion, the patient should not be held responsible. But if there is only a want of resolution—an inertia of thought, from which cause, comparison and consideration are not exercised, and the illusion thrown off—then the individual is himself to blame, and should be held to answer for what has resulted from his own want of resolution. If the power to reason by a special effort, is destroyed, he will be no longer responsible for his acts. Both sanity and insanity may, in many cases, depend upon the amount of resolution exerted by the individual in reasoning upon the subject. Fear is one of the lowest, if not the very lowest, motives that can influence the conduct of men. When all power of reasoning from cause to effect is destroyed, then, of course, the motive of fear cannot be brought to bear; but when it will influence conduct and pre-

¹⁷ 12 American Jour. of Insanity, 339.

¹⁸ Farrer v. State, 2 Ohio St. 54, 76.

¹⁹ State v. Pagels, 92 Mo. 300, 10 Wes. 288, 4 S. W. 931.

vent crime, it should be inflicted upon those of insane or unbalanced minds, as well as upon the sane.

There is no doubt that the high intellectual powers of man may be let down and prostituted by habit; by giving way to passion instead of being properly restrained; by permitting the mind to dwell upon improper subjects, or taking what is known to be a wrong view of things, from a controllable indisposition to make the necessary effort until a morbid state is superinduced. Just as the sexual appetite may be intensified by habits of life until it is beyond control, so stimulus of any other passion or steady fixedness of thought in a particular channel causes an increased flow of blood to the brain and may be continued until there is an actual change of structure.

“Inefficiency of intellectual force” is a convenient plea for the gratification of proscribed and dangerous indulgencies, or passionate revenges; but it would be puerile and dangerous to admit such a plea in a court of justice. For the time being, a person may be in a state of mania, or in a condition bordering thereon from ungovernable passion, but he is not the less responsible, for he has wrongfully permitted himself to become so. If, however, he becomes *insane*, continuously and not momentarily, even though he has brought it on himself wrongfully, he is not considered in law responsible. In the State of Connecticut the courts have gone to the extent of saying that “it is within the province of a jury to consider moral mania, if satisfied of its existence, in determining the degree of crime, and give it such weight as it is fairly entitled to under the circumstances.”²⁰

One of the forms of moral insanity, is kleptomania and that as a form of insanity it is now recognized by some courts is evident from the following language taken from an opinion delivered in the Texas Court of Appeals: “Kleptomania, which is an uncontrollable propensity to steal, is now a well recognized species of insanity, and, if clearly established by the evidence, constitutes a complete defense in a trial for theft, as it would render a person subject thereto, morally and legally irresponsible. It is ordinarily an abnormal condition which is produced by, or results from dis-

²⁰ Anderson v. State, 43 Conn. 514, 21 Am. Rep. 669.

ease and the abnormal tendency continues after the disease to all external appearances has ceased. This continuance shows, however, that the mental disease, though latent, still exists. It will also be found accompanied more or less by the other symptoms of incipient derangement, such as a general alteration in the accustomed mode of feeling, thinking, occupation and life of the individual; a disposition to scold, dispute and quarrel, to drink and to wander about doing nothing; and the bodily signs of excitement are noticed, such as restlessness, want of sleep, rapid pulse, etc. The stealings are usually small and frequently of such articles as would make the action ludicrous if it were not pitiable and the moral nature abhors the deed.”²¹

§ 161. Experts and courts—Evidence.—While experts may be called to testify as to states of mind and conditions of health, it is for the courts to declare whether such states and conditions constitute irresponsibility. This is generally accepted as the true doctrine by the courts of this country, although it is also maintained that insanity is a fact to be determined like any other fact by the jury. This is because we have no governmental experts trained for the purpose of testifying in court when questions of responsibility arise; neither have we the power, nor would it be practicable, to compel the attendance of all experts at every trial. Consequently in most cases dependence must be placed upon the experts in the immediate vicinity of the place of trial. There is no possible form of lunacy and no theory in regard to what constitutes lunacy but what has its ardent advocates. The defendant having decided upon his defense will bring forward his experts to substantiate it, and will have none others; the State, on the other hand, only calls in the experts who will denounce the theory of the defense as utterly untenable. On both sides the experts air their theories and show the absurdity of the theories advanced by the other side. And all this not merely for the sake of having a discussion, but to enable

²¹ Harris v. State, 18 Texas App. 287; Looney v. State, 10 Texas App. 520, 38 Am. Rep. 646n.

the jury to determine whether a man shall be deprived of his life, liberty or property. The jury hears these conflicting theories; there is no court of experts to say which is correct, and it therefore devolves on the court trying the particular case to instruct the jury as to which of these theories the law regards as tenable.

Sanity is always presumed to exist until the contrary is shown, and then the presumption of the continuance of insanity takes its place; that is, in cases of chronic as distinguished from spasmodic and parenthetical insanity or that arising in delirium tremens.

To sustain a finding that the defendant is insane in a criminal case there should be a preponderance of proof sustaining that hypothesis.²²

Insanity is proven from all the facts brought out in the particular case, and whatever tends logically to establish or refute the hypothesis of insanity is properly admissible. Evidence of physical peculiarities likely to explain a person's mental condition, and of diseases likely to have an effect on his mind, is proper in such an investigation. Proof of insanity in relatives sufficiently near to lead to the inference of insanity in the blood is admissible. The fact that an inquisition of lunacy has been held only makes out a *prima facie* case of insanity. "Delirium tremens," although the result or consequence of continued drunkenness, is insanity, or a diseased state of the mind which affects responsibility for crime in the same way as insanity produced by any other cause; for it is shunned by the patient and not voluntarily assumed, either as a cloak for guilt or to nerve the perpetrator to the commission of crime."²³

"On a trial for murder where insanity is set up as a defense, a physician having stated, on examination in chief, that in his opinion the prisoner was insane, he may be asked, on cross-examination, in order to test the value and accuracy of his opinion, whether he believes that the accused knows right from

²² Parsons v. State, 81 Ala. 577; Kelch v. State, 55 Ohio St. 146; Ford v. State, 73 Miss. 734, 35 L. R. A. 117.

²³ Maconnehey v. State, 5 Ohio St. 77.

wrong—that it would be wrong for him to commit murder or rape, arson or burglary? And a non-professional witness may state his opinion in connection with the facts on which it is founded. And even the opinion of a physician on such a question is entitled to little weight, unless the reasons for the opinion are stated and appear to sustain it.”²⁴

“The opinion of a witness as to the sanity of a person, must be given as he holds it at the time of the examination as a witness, and on his direct examination he cannot be asked what his opinion *was*. Nor can he be asked if, in his opinion, a person had capacity to make a will or deed. Such inquiry involves a matter of law, and also assumes that the witness knows the degree of capacity required for the purpose.²⁵

An expert is required, when asked as to the existence of any particular disease or symptom, to state not simply his own personal view, but the general sense of the profession to which he belongs.

Special and *ex parte* interviews with the patient are very unsatisfactory and inadequate tests of sanity or insanity.

There are few persons with capacity enough to commit crime who have not sufficient capacity to feign insanity for a short period, and lunatics are equally capable of feigning sanity. As there is little possibility of observing a prisoner in unrestrained intercourse with others, and because the observer cannot exercise such control over the prisoner as would enable him to apply adequate tests, prison interviews are peculiarly imperfect tests.

The cases are numerous where insanity has been set up as a defense to an indictment for a crime, and there are some cases in which the accused has refused to make the plea and has insisted that he was sane.

A man by the name of Rhinelander was arrested and indicted for shooting a man in New York City. The plea of insanity was made for him, not by him or his counsel, but by the district attorney, acting at the instance of the family and friends of the prisoner. He strenuously denied the insanity and sought to have

²⁴ Clark v. State, 12 Ohio St. 483, 40 Am. Dec. 481.

²⁵ Runyan v. Price, 15 Ohio St. 1, 86 Am. Dec. 459.

himself adjudged sane so as to plead to the indictment. His case was submitted to three commissioners, two of whom reported him insane, the other reaching a different conclusion. On the report of the commissioners being filed with the recorder, he sustained the views of the minority, set aside the finding and report and held him sane enough to plead.²⁶

Another case was that of George Francis Train, commonly known as the "Great American Traveler," who, having been arrested for crime, had his sanity tried by a jury impanelled at the instance of the district attorney. The jury found him sane, and when he came to be tried upon the indictment his counsel called the witnesses produced by the district attorney before the jury which tried his sanity, who all swore that he was insane. The district attorney, satisfied that he was insane, refused to contravert this evidence, and the jury, under the direction of the court, acquitted him, the court, however, directing them to state in their verdict that it was on the ground of insanity. The jury refused to add this to their verdict, but the court entered such finding on the records and committed Mr. Train to an insane asylum. His attorneys then called a third jury, and, proceeding under the statutes of New York, upon the allegation that Train was committed to an insane asylum and was sane at the time of the application, had a third trial, in which he was declared sane and set at liberty.

In Louisiana, in the trial of a man for murder in the first degree, his counsel, against his protest, set up the defense of insanity; he insisted on stating to the judge and jury that he was not insane and did not wish such a defense made for him, and in every way tried to throw discredit upon the testimony offered in his behalf. The jury, however, acquitted him on the ground of insanity, probably influenced thereto as much by his conduct as by the testimony.

§ 162. Summary of the law as to criminal responsibility.—It may be well at this point to summarize the law as to the want of mental capacity, when considered in reference to crimes. This

²⁶ 2 Medico-Legal Jour. 508.

incapacity, in so far as it takes away the element of criminal intent and becomes an available defense to an indictment, may exist by reason of infancy, idiocy or insanity.

When a person is under the age of fourteen years, the law presumes want of capacity to intend to do a criminal act, and this presumption is conclusive if the accused is under seven. There seems to be no presumption that a person is past a certain age. The defendant being before the jury, they may infer his age from his appearance; and if his appearance or the proof introduced by him should raise a reasonable doubt of his having reached the age of criminal responsibility, the state would have to overcome it or he would go acquit.

Idiocy is usually treated as having the same effect in regard to capacity to entertain criminal intent as insanity, and the proof and burden of proof is generally regarded as the same in each case. In Massachusetts, however, it has been held that although sanity is presumed, as to idiocy the rule is that the jury must be satisfied, when the proof is all in, not only of the doing of the acts charged, but that they proceeded from a responsible agent, one capable of committing the offense, in order to warrant a conviction.²⁷

Insanity is available to a defendant in several ways. If at the time he is brought to trial he is insane, or at the time punishment is to be inflicted upon him, all proceedings must be suspended. It is against reason and humanity to proceed further.

If at the time he committed the crime he was insane, he is then in contemplation of law innocent, as he is not, on account of his condition, criminally responsible, and should be acquitted.

The law presumes every man to be sane, as that is the rule and insanity is the exception.

The general rule is that if the defendant was able to tell right from wrong, and exercise judgment in his choice between them, he is responsible.

In some States a jury is required, in case they acquit on the ground of insanity, to say so in their verdict, and the defendant is then confined as insane. The purpose of such laws may be

²⁷ Commonwealth v. Health, 11 Gray. (Mass.) 303.

good, and probably were enacted because emotional juries were prone to acquit, upon little or no evidence, murderers upon the ground of emotional insanity; but it by no means follows that because a defendant was insane at the time he committed the crime, he remains insane up to the time of the trial; and if not insane then, there is no justice in committing him to an asylum.

Not every kind of insanity constitutes a defense, for it must be in regard to the very act itself.

The kind or degree of insanity which would not excuse a man for a criminal act may render him legally incompetent for the management of himself or his affairs.

This implies that the mind of an insane person acts more deliberately and clearly and with sounder views of its relations to others when about to commit a crime than when buying or selling a piece of property. But no satisfactory reason based upon observation or experience can be given for this distinction. As long as it exists, however, examining physicians must be governed by it, and must take it into account whenever they investigate any case of insanity.

§ 163. Feigned insanity.—In discussing the subject of feigned diseases nothing was said as to feigned insanity, as that is generally regarded as a subject by itself.

It is very common for those accused of crime to feign insanity in order to escape punishment, and cases have been known where this has been done successfully, even under close scrutiny for a long time, notably in one case for two years, the accused being frequently subjected to the punishment of the strait-jacket without acknowledging the deception.

That it was feigned in this case was clear to the attending physician, *because the accused slept soundly all the time* at night.

The examination of cases where there is a suspicion that the insanity is feigned is much more difficult than where a bodily disease is feigned; and yet constant watching, which means by night as well as day, will inevitably disclose the fraud. The first thing that should attract attention will be that generally there is no appearance of insanity until after the commission of the crime and the detection of the criminal, and this at once sug-

gests a motive for feigning insanity. An inquiry as to the previous life and habits will generally disclose whether the act was at variance with all previous conduct or was simply the culmination of a life of misdeeds. This is an important circumstance, for it is very unusual for a person to act contrary to everything one would expect of him, judging from his previous life, without some great mental disturbance.

If a motive is found for the commission of the crime, especially if it corresponds to the previous habits and conduct of the accused, it should indicate responsibility. Careful plans laid and carried out in the commission of the crime by no means determine the question, as the insane are often very shrewd in making plans to escape and in enticing their victims within their power; but their attempts to escape are generally of such a character as to betray their mental weakness, or they will break down in the attempt.

The insane, as a rule, make no attempts by disguise or otherwise to avoid arrest or punishment; indeed, they are, as a rule, very apathetic in regard to the consequences of their acts.

Mere ignorance should not be mistaken for imbecility, and the examination should be for the purpose of determining whether the accused possesses the intelligence which his previous life and educational facilities would indicate he ought to have.

A frequent method adopted by those feigning insanity is to claim that they hear voices impelling them to do certain things; of course, this cannot be contradicted, but as the hallucinations which attend upon insanity are always accompanied by other unmistakable signs of the disease and are generally concealed by the really insane, a careful watchfulness ought to disclose the fraudulent character of the voices.

Be suspicious of the man who seeks to make you believe he is insane.

One who is feigning insanity may be induced to perform almost any act, if it is suggested in his hearing as a mark of insanity.

There are tests which may be applied to him and his actions which will assist in detecting the fraud, of which the following are samples:

As it is not worth while to ask him directly about his insanity, any conversation with him should be directed to other topics, and thus the examiner may determine whether his mind is deranged in other directions; and then it may be turned to topics which would naturally arise out of his present condition, and the perversion of his intellect, if there is any, will be apparent.

If he is called upon to write, his writing will often betray him, and what he writes may have an important bearing on the question.

By the narration of the examiner's own history so as to make it conform to the patient's story of himself, thus gaining his confidence; or by getting another to do so for that purpose, the examiner may persuade the patient to talk freely and thus disclose his exact condition.

Such patients may conceal, but they never deny, their fixed ideas, if truly insane. Sometimes the use of chloroform may throw them off their guard, and so may electricity, and cause them to act naturally and sanely.

Periodicity is a necessary attendant of many forms of insanity, and the appearance of symptoms which should be intermittent, without any interruption, should arouse suspicion.

Fortunately, persons who feign insanity are not generally learned in the literature of the disease, nor have they had opportunities for the observation of patients, and so they generally exaggerate some symptoms and wholly overlook others.

Silence or evasion of questions is not the mark of the imbecile or the insane, unless that is the phase of the disease, and then there are other unmistakable signs which must be present. The tendency is to answer questions, coherently or incoherently, and not to remain silent.

Time is often destructive of the best laid plans of those feigning insanity, it being impossible to keep up the high pressure, and when they fail to do this the fraud is exposed. The real lunatic labors under a nervous excitement that makes him sleepless and invests him with singular and persistent muscular vehemence. Sleeplessness is always an attendant of insanity, and when a patient sleeps naturally and soundly at night the examiner may safely assume that he is feigning.

Muscular twitching, vague simpering and self-talking, when alone and in company, the eyes appearing very dull and very wild, are signs which cannot be assumed and kept up for any length of time by a simulant.

Epileptics sometimes exaggerate some of their symptoms and simulate others so as to attract sympathy, but simulated idioey or mania is rarely attempted except by the responsible and sane.

But, after all, it must at least be admitted that even at this day much is to be learned in regard to this disease; that there are no certain legal or medical rules which will decide the question of sanity or insanity in every case; that each case must be determined by its own circumstances.

It seems now to be settled that the best tests of responsibility are knowledge of right and wrong and free agency; that careful and prolonged investigations are always essential for the determination of questions arising in regard to this disease; that facts and not theories are what are to be submitted to the court and jury; that because a man's father was insane, it does not follow that he is insane, nor because his father was sane that he is sane, and that the atrocity of the crime or the lawlessness of the perpetrator does not indicate insanity but depravity, which is consistent with responsibility.

Notwithstanding the most careful research and faithful examination in the light of all modern knowledge, it is true that there have been cases where the sane have been pronounced insane and the insane sane, but this only shows man's fallibility and not want of improvement in methods.

CHAPTER XVIII.

POISONS.

§ 164. Poisons—Importance of subject—Difficulties of diagnosis—Punishment for poisoning—Detection of arsenic.	§ 166. Classification and effects of poisons.
165. Definition — Idiosyncrasies—Ways of introducing poison into the system—Methods of detection—Absorption.	167. Medical evidence in poison cases—Effect of physical condition—Transmission of arsenic through milk—Diseases and poisons—Poisonous food—Detection of poison.

§ 164. Poisons—Importance of subject—Difficulties of diagnosis—Punishment for poisoning—Detection of arsenic.—This subject, both in its medical and medico-legal aspects, should receive careful study from every student of medicine. He who is not a diligent student of this subject, perfecting himself in the knowledge of the kinds and effects of poisons, and more particularly in the processes of chemical analysis, whereby their presence is detected or their absence proved, shows himself lacking in the understanding of what in these days is required of every physician and of what the public have a right to demand of his profession. Poisoning is the most frequent of all the causes of violent death except the casualties of war, and notwithstanding the advance in modern scientific methods, the common poisons are unfortunately so easily procured and administered and so closely resemble disease in their symptoms and post mortem lesions that it is not strange that they are extensively used both for homicidal and suicidal purposes.

One of the most notorious cases of poisoning was that of the woman Robinson in Massachusetts, who murdered nine persons, including two of her own children, for the sake of their insurance, of which she was the beneficiary, and at the last was detected in an attempt to poison her own son. In every case a

reputable physician was in attendance and gave a death certificate, and his thorough deception was brought about by the following process: Whenever one of her intended victims was taken sick, she would send for a physician, and after he had diagnosed the disease then she would begin to administer arsenic at first in small doses and gradually in larger until the victim died, apparently as the result of the disease, which was in fact present.

In an attempt to prevent the easy procurement of poisons some of the States have passed laws requiring a record to be kept of all poisons sold without a physician's prescription, showing the name and amount of the article sold and the name and residence of the purchaser, this record to be open at all times to the police; also forbidding altogether the sale of some poisons such as cocaine without a physician's prescription; and requiring all packages of poison to be marked conspicuously "Poison," accompanied with the name of the antidote. Violations of the law are punishable by fine or imprisonment, and in some of the States any person purchasing poison under a fictitious name may be punished.

Ascertaining the traces of poisons either on the living or the dead body is one of the most important processes in legal medicine, and its importance is only equaled by its difficulty.

The law deals with the poisoner with the utmost severity, making his punishment death, recognizing the heinousness of his offense and seeking by the severity of the punishment to prevent the commission of this subtle crime.

The laws of Ohio provide that "whoever purposely, * * * by means of poison, * * * kills another is guilty of murder in the first degree and shall suffer death." This is as explicit as the English language could make it, and yet, in a case tried a few years ago in Ohio, where a son was tried for the crime of poisoning, where the proof was clear that the father was poisoned and the defense was that the son did not administer the poison, the jury found him guilty of murder in the *second* degree. Very properly, I think, the judge said to the jury that they were a disgrace to the jury box and that he never had seen or read of a jury so wilfully and grossly ignorant of their duty or corruptly swerved from it. As well might they have found the accused guilty of robbery, for if he did not poison his father he should

have been acquitted, and if he did poison him he was, under the law, guilty of murder in the first degree and nothing else. Of course the accused, glad to have saved his life, did not complain of the verdict, and the judge not having the power to set it aside, was compelled to send him to the penitentiary instead of the gallows.

In a still later case in Ohio, where a woman was charged with poisoning her husband, the *judge* charged the jury that they might find her guilty of murder in the second degree, and they promptly did so. Until a court is found which will so instruct a jury in a case where a *man* is being tried for poisoning, it will be difficult to find any reason for such an instruction. In a case in Connecticut it was decided that on an indictment for murder perpetrated by means of poison the jury may find the prisoner guilty of murder in the second degree. The statutes of that State provide that "murder perpetrated by means of poison * * * or any other kind of wilful, deliberate and premeditated killing shall be murder in the first degree," and that "the jury before whom any person indicted for murder shall be tried shall, if they find such person guilty thereof, ascertain in their verdict whether it be murder of the first or second degree." In the decision the court said, in justification of its holding: "If any case can be supposed where murder may be committed by means of poison and not be the result of a wilful, deliberate or premeditated act, then a conviction of murder in the second degree may be legal."¹ The statement of that proposition carries its refutation with it without further argument.

Other provisions of the Ohio laws are the following: "Whoever administers poison to a person with intent to kill or injure such person, or mingles poison with food, drink or medicine with intent to kill or injure any human being, or wilfully poisons any well, spring, cistern or reservoir of water, shall be imprisoned in the penitentiary not more than fifteen nor less than two years."² And there is also this law peculiarly applicable to those who are practising medicine: "Whoever, while in a state of intoxication,

¹ State v. Dowd, 19 Conn. 387.

² Revised Statutes of Ohio, § 6812.

prescribes or administers any poison, drug or medicine to another which endangers the life of such other person, shall be fined not exceeding \$100 and imprisoned not more than twenty days.”³ Of course, these last two provisions of the statutes apply only in cases where death has not ensued from the administering of the poison.

Similar provisions are found in the statutes of all the states.

Widespread as is this crime, its commission is often prevented in these days, when science has attained such excellency, by the fact that even after the lapse of years the very dust to which a body has returned may be exhumed and in it found by the skilful examiner evidences of guilt sufficient to send the murderer to the gallows. This is especially true where arsenic was the poison used, and whether it is due to the formation of the yellow, arsenious sulphide or of some other stable compound, it is quite certain that after a body has once been buried no great loss of arsenic occurs either by volatilizing or leaching; so that arsenic has been detected and isolated and murderers convicted after the lapse of even twenty years. Of course, every precaution must be used in such cases to satisfy the jury that the poison could not have come from the earth, coffin, coffin lining, clothes, ornaments or other post mortem sources. In these days when embalming is so common this will be especially difficult, and this point will be considered more at length hereafter.

§ 165. Definition—Idiosyncrasies—Ways of introducing poison into the system—Methods of detection—Absorption.—The first question to be answered in entering upon the investigation of this subject is: What is a poison? Many definitions have been given, but the true method of arriving at a proper legal definition is to take that which in the fewest words expresses the general understanding of what is comprehended in the name poison. The ancients called everything a poison which acted deleteriously on the human system and attacked directly the vital principles.

In our day, however, any substance which, when introduced

³ Revised Statutes of Ohio, § 6813.

into the body by swallowing, or by any other method, occasions disease or death, is a poison, and this must be its ordinary result, in a state of health, and not by mechanical action. A substance which affects a person injuriously, through idiosyncrasy, is not a poison. Many diseases cause the most innocent substances to act injuriously, but that does not make them poisons, nor can substances like powdered glass, fragments of iron, etc., which may produce death when swallowed, be classed as poisons, because they act mechanically.

Some definitions speak of poison as a substance which, when administered in small doses, will occasion disease or death, but the size of the dose cannot control the nature of the substance.

Poisons exist in the three kingdoms of nature, but those which proceed from animals are usually called *venous*, as the venom of the viper, etc., while those that are the product of disease have the name *virus*. As commonly understood, poisons are deleterious substances furnished by the mineral and vegetable kingdoms.

Another definition, and one of the best and clearest, is given by Wharton and Stille, as follows: "A poison is a substance having an inherent deleterious property which renders it, when taken into the system, capable of destroying life."⁴

These various definitions are given as examples, and the medico-legal witness may find some that are better and more concise; in any event he should be sure to have some clear and defined idea of what a poison is before he attempts to testify, for that will probably be about the first question asked him.

As instances of idiosyncrasies the following will show what may be found: Humboldt saw in the mines of Peru from five thousand to six thousand persons employed in the amalgamation of the minerals or the preparatory labor, many of them passing their lives in walking barefooted over heaps of brayed metal, moistened and mixed with muriate of soda, sulphate of iron and oxide of mercury, exposed to the atmosphere and the sun's rays. And yet they enjoyed the best of health, although constantly inhaling the fumes.

Dr. Cristison relates an instance of a gentleman unaccustomed

* 2 Wharton and Stille, part 1, § 321.

to the use of opium who took nearly an ounce of laudanum without any effect, and Dr. Hartshorne tells of a man who was in the habit of taking five grains of corrosive sublimate every day. And in case of many articles of food, what is harmless to one will act like a poison upon another.

The presence of disease may render the system tolerant of substances which, if the patient were healthy, would be poisonous, or, on the other hand, may render him more susceptible to poison. Instances of both kinds will readily occur to the examiner. Habit diminishes the effects of certain poisons, notably opium, but as a general rule habit cannot *altogether* counteract the insidious effects of poisons.

Soon after Prof. Webster was arrested for the murder of Dr. Parkman he seemed to be prostrated; he could not stand, and appeared like a man in a fit, so that he had to be carried by the attendants into his cell. About an hour afterward he was taken by the officers to the medical college. Upon their arrival at the college he was asked to get out and come upstairs, but took no notice. He was supported up the stairs by men on each side, taken to the laboratory and seated upon a chair. He trembled violently, was in a profuse perspiration and called for water. A tumbler of water being given him, he tried to drink it, but seemed unable to swallow and spilled a good deal of it on the floor. After remaining in the laboratory a short time, during which the portions of Dr. Parkman's body which had been found in the vault were brought in and laid on the floor in his presence, the officers were told to take him back to the jail. He made no effort to arise, but was lifted up by an officer on each side, taken to the carriage and back to the jail, where he was placed in his berth and remained there, apparently without moving, until the next morning. His condition at this time, he afterward confessed, was due to his having swallowed a strychnine pill, which he prepared on the day of the homicide and carried with him for the purpose of suicide. His explanation of its failure to kill was that the state of his nervous system probably defeated its action.⁵

⁵ Cosmopolitan Magazine, Vol. 19, p. 547.

If many persons partaking of the same food are poisoned, their symptoms may be very different, and the same poison may produce very different results on different persons. It is therefore essential to inquire minutely as to all the dishes and what dishes each partook of and in what quantity.

In old age poisons produce fatal results, even when administered in comparatively small doses.

There are four different ways by which poisonous drugs may be introduced into the system. These are hypodermically, insertion in a wound or inhalation as a gas, application to a serous membrane, absorption by way of a mucous membrane, and application to the unbroken skin. But, however introduced, science possesses the means of recognizing them if any portion is left, whether in the blood, the secreted fluids, or the tissues themselves. In May, 1856, William Palmer, a surgeon, was tried for poisoning John Parsons Cook, a solicitor, by strychnia, and the case was remarkable on account of the wide conflict in the expert medical testimony, the defense being that Cook died of tetanus. The leading witness for the government was the famous Alfred Swayne Taylor, analytical chemist, who made an analysis of the stomach. He attributed the death to strychnia, although he found no trace of it in the analysis; and his opinion was concurred in by other experts.

The defense claimed that if strychnia had been administered it could have been discovered, and their medical experts, among whom were several famous analytical chemists, denied the possibility of poisoning by strychnia without its being discovered by the analysis. One of them declared that he could detect the fifty-thousandth part of a grain if mixed with organic matter; and that if ten grains were put in seventy thousand grains of water he could discover its presence in the tenth part of a grain of water. The facts outside the medical evidence were sufficiently strong against Palmer to warrant the jury in finding him guilty.⁶

From even a trifling quantity of material the analyst will sometimes produce the most damaging results. One of a very

⁶ *Regina v. Palmer*, 3 Med.-Leg.-Jour. 357; Browne & Stewart, Trials for murder by poison, p. 85.

important set of exhibits in a celebrated antimonial poison case was a drop of water in a vial. It was the residue of some drinking water, testified to as having been prepared by the indicted person to be given to his wife. The bottle, new and cleansed with distilled water, was filled with the drinking water, corked and placed by the witness in his pocket. Unfortunately the cork came out, and the suspected water was lost, as the witness testified, and he was directed to bring the empty bottle and the lining of his pocket for examination. The quantity of water left in the bottle was so trifling that it could not be poured out, but had to be withdrawn by means of a capillary glass tube, yet when it was evaporated slowly on a microscopic glass slide, crystals of tartar emetic appeared. These were micro-photographed, and then the metallic antimony was obtained from them—the red sulphide and other characteristic reactions of antimony were produced. Antimony was also secured from a strip of the pocket lining no longer than a man's finger.

In the case of *The People v. James Stephens* (N. Y.), the body of the prisoner's wife was exhumed from Greenwood Cemetery after twelve months' burial, and arsenic obtained from every part of it. The soil of her grave was analyzed, but no arsenic was found, and an analysis was made of the coffin and its lining, the shroud and even the coffin nails, with like result. The glass and porcelain vessels used during the investigation were carefully inspected and found free from arsenic; and in order to show that no claim could be successfully made that the arsenic found was normal arsenic, the entire body of a woman who had frozen to death was analyzed and no traces of arsenic were discovered, and in these ways it was established to the satisfaction of the court and jury that the poison found in the body did not come from extraneous sources.⁷

In order that a poison should produce its peculiar effects on the system, it is necessary (except in the case of corrosives) that it should get into the circulation so as to be conveyed to distant parts of the body: and for this purpose it must first be absorbed. The present accepted doctrine as to the mode of transfer of the

⁷ Dr. R. Ogden Doremus, *The Forum*, Vol. 16, p. 235.

poisonous substance to remote parts of the body, is that of absorption into the circulation. Abundant proof of absorption is afforded by the detection of the poison in the blood; the secretions, especially the urine; and in the different viscera of the body, as the liver, kidneys, lungs, spleen, brain, etc. It is, therefore, very important for the toxicologist not merely to discover the poison in the stomach, but to detect it in the absorbed state in the viscera. No post mortem for poison should be conducted without an examination of the liver, the spleen and kidneys, the stomach and contents, the intestines and contents, the brain, the urine and blood. In some cases the muscles should be analyzed.

The rapidity of absorption is materially influenced by the solubility of the poison, by the nature of the surface to which it is applied, it being in direct ratio to the vascularity of the part; and by the fullness of the blood vessels, the rapidity of absorption being inversely to the quantity of circulating fluid. After absorption into the blood, as the poison passes through the different organs, a portion is immediately separated by these and at once eliminated by the various secretions, as the bile, urine, saliva, pancreatic fluid and sweat, and another portion is temporarily deposited in the organs and tissues.

§ 166. Classification and effects of poisons.—Poisons are classified in the latest works on the subject as: Irritants, narcotics and narcotico irritants. This subdivision, while not strictly accurate, is most commonly in use, although it is well known that some poisons are classed as irritants which are narcotic in their actions, and some pure narcotics. Thus, there are recorded cases of sulphate of magnesia acting as a narcotic and of opium acting as a purgative.

When poisons are to be considered under the head of symptoms and lesions which they determine, they are more properly classed as irritants and corrosives, hyposthenisants, stupefiants, narcotics and neurotics.

Poisoning by irritant or corrosive poisons has the peculiarity attributed to the local irritant action, which may result in a violent inflammation, corrosion and a disorganization of those

tissues attacked by the poisonous substance; the effects of the substance which has been swallowed being almost exclusively due to lesions of the digestive organs.

Under the action of corrosive poisons the symptoms are commonly manifested immediately, because mere contact produces disorganization of a part, usually indicated by some well marked symptoms. In the action of purely irritant poisons, the symptoms are more slowly manifested, rarely showing themselves until at least half an hour has elapsed from the time of swallowing the substance. Although these rules are not without exceptions, as it is often important to find out what kind of a poison has been swallowed, the examiner should always inquire how long after swallowing the poison the symptoms appeared; and examine the mouth and fauces to see whether there appears any decided chemical action. Although there are many irritant poisons which have no corrosive properties, every corrosive may act as an irritant.

The hypostenisants have the peculiarity not merely of producing a local irritation, though this may actually occur, but also of causing general disturbance resulting from their absorption; these symptoms may be disproportionate to the local effects, which oftentimes are entirely absent and are very different from irritation or inflammation; these consist in fact of a rapid and profound depression of the vital forces, and are associated with a manifest alteration of the blood.

Poisoning by stupefying poisons has as its essential character a direct special action upon the nervous system, a depressant action or stupor sometimes accompanied with local irritation, oftentimes of a slight character.

Poisoning by narcotics is characterized by an action quite special and distinct, that can only be defined by its own name, *narcotism*.

Poisoning by neurosthenic or neurotic poisons is characterized by a violent excitement of the nervous centers, the intensity of which may be so great as to produce death.

Irritant poisons belong for the most part to the mineral kingdom, and may be divided into the metallic and non-metallic irritants. There are a few, very seldom used criminally, derived

from the animal and vegetable kingdoms, and some of the gases are classed with the irritants.

Chlorine is a powerful irritating gas of a greenish yellow color. If inhaled into the lungs, it may destroy life like gaseous ammonia, and is readily recognized by its smell and color, and especially by its powerful *bleaching* properties.

The following are commonly classed with the irritants:

Acids—Sulphuric, nitric, muriatic, oxalic, tartaric and acetic acid and vinegar. The mineral acids (sulphuric, nitric and muriatic) are local in their action, and are seldom used for homicidal purposes, except in the case of young children; occasionally they are employed by suicides, but most cases of death from these acids result from accident. The symptoms are exhibited immediately on being swallowed, and consist of a burning in the mouth and gullet, with intense pain in the stomach, attended with constant eructations and vomiting of a brownish or blackish matter, often mixed with blood, together with mucous and shreds of detached mucous membrane. The ejected matter is intensely acid; will produce effervescence on a marble slab and change the color and destroy the texture of the cloth or other material on which it happens to fall. Swallowing is very painful and sometimes impossible; thirst intense; bowels constipated and urine diminished. The pulse small and weak, and the skin cold and clammy; respiration difficult, and the countenance expressive of great anxiety; and there may be a cough with difficulty of speaking. When the force of the acid is spent upon the glottis and the upper portion of the windpipe, the mouth is excoriated, the lips stained black by sulphuric and yellow by nitric acid and shriveled, and death results from suffocation. If the acid is poured far back in the throat, the mouth and lips may escape injury. The mental faculties usually remain clear.

Alkalies—Potash and soda, ammonia and sesquicarbonate of ammonia. The effects of these alkalies upon the animal system are very analogous and also strongly resemble the results produced by the mineral acids—being powerfully caustic in their concentrated state. They attack the tissues with which they come in contact by virtue of their chemical affinities, causing their dis-

organization and complete destruction. Other alkalies are chloride nitrate and carbonate of baryta.

Metalloidal—Phosphorus, which is largely diffused as a constituent of the animal body is essential to the performance of its normal functions, especially to the great nerve centers. It is eliminated from the system in the urine in the form of phosphates. In its free state it is a powerful irritant poison, and is less employed in this country for poisoning than in Europe, and is seldom used for homicidal purposes.

Bromine, which is a dark red, volatile fluid, excessively pungent to the eyes and respiratory organs, having an acid taste; highly corrosive and destroying animal tissues very rapidly.

Iodine, which, like phosphorus, produces a local irritant effect and a remote influence if used in small doses. In large doses it occasions burning heat in the throat, severe pain in the abdomen, vomiting and purging, the vomited matter yellowish in color, unless it is farinaceous, when it is blue, having the peculiar odor of iodine and sometimes mixed with blood. Other symptoms are giddiness, headache, thirst, convulsions and fainting. The bowels may also exhibit the presence of iodine. In chronic iodine poisoning, the symptoms are nausea, vomiting, purging, pain of stomach, tremors, palpitation, salivation, cramps, general emaciation, and a tendency to absorption of certain glands, especially the testes in males and the mammae of females. The different effects of iodine upon different persons are quite remarkable; some persons bearing very large doses with little or no suffering, while others are seriously affected by the smallest doses.

Metallic—Arsenic, which, in the various forms of arsenious acid, arsenites, the so-called chloride of arsenic, arseniate of potash, and the arsenite of copper, or Schlee's green, is most commonly used in poisoning. When arsenic has been administered in doses large enough to endanger life the symptoms that may present themselves are very numerous, and present more anomalies than those of any other poison. Usually vomiting with persistent burning is suggestive of arsenic. It is, therefore, wholly unjustifiable to insist, as was done in the Maybrick case, that because one or two common symptoms are absent arsenic

was not the cause of death. The effects of arsenic and of many other poisons vary with the size of the dose; whether it was dry or in solution; with the emptiness and condition of the stomach, with the general health and idiosyncasy of the patient, with the treatment, and many other conditions.

An important circumstance is the antiseptic power of arsenic, which accounts for the remarkable preservation of the body for many months after death, whereby the detection of the poison is possible for a long period after death—in one case as long as twenty years and in another fourteen years. In the latter case most of the body was decomposed, but enough remained for purposes of identification.

Where arsenic has been used there is generally noticed an absence of the usual cadaveric odor and the presence of numerous yellow patches over the abdominal viscera, due to the production of the yellow sulphide by the action of sulphuretted hydrogen on the arsenious acid. Notwithstanding this is the general effect of arsenic, exceptional cases are known where it seemed to hasten the process of putrefaction, and the expert should be careful not to be too sure that the unusual degree of preservation of the body is due to the presence of arsenic, for it may arise from other causes.

Much was sought to be made at one time out of the fact that arsenic was naturally present in the soil, and from thence found its way into the body buried therein; but such arsenic is almost always combined with iron in such an insoluble form that hot concentrated acids are necessary to separate it. Bodies have been buried for months in an arsenical soil, even in wet weather, and yet no trace of arsenic was found in the body. Such cases arose, however, before the custom of arsenical embalming was so common as it is now, and therefore at the present time the examiner should consider it not only possible, but probable, that there has been post mortem absorption, since the graveyards are necessarily filled with the soluble salts of arsenic. Notwithstanding so high an authority as Orfila claimed that arsenic was a normal constituent of the body, modern research has demonstrated the falsity of the claim.

Mercury is classed among the metallic poisons, but is not poisonous in the metallic form; indeed, liquid mercury was formerly administered to relieve constipation. The *vapor* is poisonous when inhaled, and as this is given off from the metal even at ordinary temperature, those who work in mercurial ores are very liable to become poisoned by the fumes. The symptoms of this kind of poisoning may come on gradually or suddenly, and may or may not be accompanied with salivation. The chief symptoms are tremors of the limbs and paralysis, showing the action of the poison on the nerve centers, and this condition is called mercurial tremors and shaking palsy. The upper extremities are usually first affected, and then by degrees all the muscles of the body; the arms and legs become unsteady, so that the patient cannot grasp anything or walk firmly, and he may lose the ability to speak or chew his food. In the last stages come loss of memory, insomnia and delirium. A curious symptom generally observed in such cases is the brittleness of the teeth, causing them to chip.

Lead, another metallic poison, is not considered poisonous in its metallic state, but as it is easily oxidized by the fluids of the stomach it would soon be converted into a deleterious compound. All its salts, excepting perhaps the sulphate, which is very insoluble, are poisonous. While acute lead poisoning, except by accident, is rare, chronic, or slow lead poisoning is of frequent occurrence, since there is no metal more constantly and insidiously introduced into the human system than lead under its various forms. Persons who inhale the fumes and powders of lead, whether working in the lead ores, or paints, or even by sleeping in a freshly painted room, are likely to be attacked with lead poisoning; the handling of pewter vessels, the use of glazed pottery, which contains in the glazing litharge, the drinking of alcoholic liquors after contact with lead, may produce serious results. Lead may also be found in certain medicinal substances, derived from their mode of manufacture, and many articles of daily domestic use are contaminated with lead. The external application of preparations of lead, as hair dyes and cosmetics, frequently produces lead poisoning, and the application of white lead as a dressing to a scalded surface will do the same. The

most frequent source of chronic lead poisoning is drinking water which has been in contact with metallic lead. Rain water should never be allowed to come in contact with lead if intended to be used for drinking water. On the other hand river and spring water are not injuriously affected by contact with lead. The only compounds of lead of medico-legal interest are the acetate and carbonate.

Copper, while not poisonous in the metallic state, if taken into the stomach soon corrodes and forms highly dangerous compounds.

As far back as we have any history of man metallic copper has been used for making pots and kettles in which articles of food were prepared. Nobody seemed to have thought that any danger could arise from this source until in 1772, when one Schulze published a book calling attention to it. Some thirty years later Dr. Eller, a prominent physician, attacked and refuted the arguments of Schulze, but they were revived by Jean Jacques Rousseau, when he was at the height of fashion, and, encouraged by the nobility, settled the question against copper cooking vessels.

In England the fashion of objecting to copper cooking utensils dates from 1774, when Dr. Falconer, a well-known physician, published a book on the subject, and almost all the leading authorities on the subject of poisons have accepted as true, and reiterated, the arguments of Rousseau and Falconer.

Indeed, so strong has been the belief in these statements that in some countries legislation has been invoked against the use of copper cooking utensils, and the preparation and sale of vegetables and other articles of food containing perceptible traces of copper. This matter proved so extremely serious in France that the subject was thoroughly investigated by French and Belgian scientists, and they produced proof that the toxic effects of copper have been enormously exaggerated, and that neither copper itself nor its compounds are to be considered as poisonous, except when given in very large doses. One of these scientists made experiments by using in his kitchen for fourteen months nothing but copper utensils, cooking in them all kinds of food, acid as well as salt; then letting the contents cool in the vessels, exposed to

the air, he partook of them without injury. He also prepared a custard of sour milk and eggs, which an American doctor had reported poisonous if cooked in a copper vessel, from having an actual case of it, but suffered no ill effects from eating the custard. In his opinion the taste of copper would make the food unpalatable long before it would cause nausea. The experiments of another scientist lead him to doubt if copper or its salts could under any circumstances be regarded as a poison.

It has also been claimed that copper fumes were very injurious to health, but this was not substantiated by a thorough examination of a village full of copper workers, descendants of copper workers, where, indeed, for five hundred years the inhabitants had been engaged in rolling, hammering and polishing copper boilers, kettles and the like. These men work from eleven to thirteen hours a day, year in and year out, in an atmosphere full of particles of copper oxide; they have greenish lines on their teeth, green tinge on their forearms and green color in their hair; copper is found in their secretions, and even after death their bones can be distinguished by their green color; and yet, though not robust looking, they are strong and tough, suffer from no special diseases and are unusually long-lived.

The result of this discussion and investigation was that the French government repealed all the laws about coloring peas and other vegetables by boiling them in copper vessels. Thus, it seems that the latest investigations fairly prove that the absorption of small amounts of copper is not to be considered as dangerous, and certainly not as a cause of death.⁹

Other metallic poisons are tartar emetic, zinc, tin, silver, gold, platinum, iron, chromic acid and bismuth. This last substance is considerably employed both medicinally and as a cosmetic. As it is well known that the adulteration of bismuth with arsenic is very common, physicians may safely charge to this cause any irritation following the use of bismuth, and should be very careful in giving a medico-legal opinion as to the cause

⁹ A System of Legal Med. By Allan McLane Hamilton et al., Vol. 1, p. 404.

of death where bismuth had been previously administered medicinally.

Vegetable—Colchicum. During decomposition of animal tissues substances are not infrequently produced which behave strikingly like colchicine with all its general tests, excepting, perhaps, Zeisel's test, which produces a green color on boiling if the alkaloid is dissolved in hydrochloric acid and ferric chloride added. In a case of suspected poisoning from colchicum occurring in Paris a few years ago, the scientists who were called upon as experts found during their investigation that ptomaines might be extracted from decomposing cadavers, which produced reactions with nitric acid and with Mandelin's test (with sulphuric acid solution of ammonium vanadate) strikingly like those occasioned by traces of colchicine, and similar results have been obtained on many occasions. Nothing, therefore, short of the extraction from the suspected body of a ponderable quantity of material giving all of the chemical reactions and physiological effects of the pure alkaloid should be accepted as proof of the presence of the poison. Colchicine resists putrefactive processes to a considerable degree.

Autumnale or meadow saffron, drastic purgatives and castor seeds or beans.

Animal—Cantharides, poisonous cheese, poisonous fish and unsound meat.

Mechanical irritants, such as pins, needles, glass, etc., though producing death, are not really to be classed as poisons.

Narcotic poisons have their operation confined to the brain and spinal marrow. Either immediately or some time after the poison has been given the patient suffers from headache, giddiness, paralysis, stupor and sometimes convulsions. They have no acrid, burning taste like the corrosive poisons, and very rarely produce vomiting or purging, unless given in large doses or combined with some irritating substance like alcohol. These poisons are comparatively few and belong to the vegetable kingdom, although some poisonous gases are narcotic in their effects.

Opium belongs to this class and, with its alkaloid, morphine, is more likely to escape discovery than any of the ordinarily used poisons. Why this is so is not fully known, but there are

several causes which might bring it about: 1. Death does not usually occur for a number of hours, and a chance is afforded for the complete absorption of the poison from the stomach, and its entire or partial elimination from the rest of the body. 2. The known tests for meconic acid (which is found in no other substance than opium) and morphine, when in complex or organic mixtures, are extremely delicate. 3. It appears quite likely that under some conditions opium and morphine undergo chemical changes in the body even before death takes place.

The examiner should bear in mind in cases of suspected opium poisoning that opium and morphine are extensively used as remedial agents, and are not infrequently taken for the relief of pain without the advice of a physician; and that these substances are present in a considerable number of patent medicines which are in common use, and therefore the detection of morphine or meconic acid in a body after death by no means necessarily indicates that poisoning was the cause of death. Contracted pupils are generally present in a case of opium poisoning.

Prussic acid, in the examination for which, it is worthy of note, that where death results from prussic acid poisoning the eye sometimes retains its lustre after death.

Ether, chloroform, which is an antiseptic substance and resists decomposition for a long time. In spite of its volatility, it remains tenaciously attached to the tissues of the dead body, and its presence has been demonstrated several months after burial in the lungs of persons who have died from its effects.

Alcohol, camphor, henbane, haschish or hasheesh, lactucarium or lettuce opium, bitter sweet, jamestown weed, tobacco and hemlock. Numerous animal tissues, especially if somewhat decomposed, yield not infrequently upon examination compounds something like the active principles of tobacco and hemlock. A number of cases are recorded in which the poisonous alkaloid was at first supposed to have been discovered, but a mistake was afterwards proved to have been made. The analyst should under no circumstances regard the presence of tobacco or hemlock as established unless all his tests agree in every respect.

There seems to be reason to believe that hemlock, or at least a substance that possesses most if not all of its properties, is at

times actually produced in animal tissue by decomposition. In view of this fact death from hemlock poisoning should never be affirmed from the result of chemical analysis alone, unless the latter has been made immediately after death and before decomposition has set in. In examining a body for tobacco poisoning the examiner should always remember that a large proportion of men and a considerable number of women use tobacco habitually, and the detection in a corpse of a small quantity of the alkaloid would not necessarily be significant of death from this poison.

Narcotico irritants are chiefly derived from the vegetable kingdom and have a compound action. At different periods after being taken they produce vomiting and purging, and sooner or later coma, stupor, paralysis and convulsions. They irritate and inflame the alimentary canal; some have a hot acid taste, and some are intensely bitter. They are very numerous, embracing a variety of well-known vegetable substances. Among them may be found fungi, nux vomica and strychnine.

There have been cases in which no strychnine has been found in the body after death, even when it was known to have been taken; in some cases this undoubtedly arose from the use of defective methods of investigation, but even where the most careful examination has been made by expert investigators they have failed to find strychnine in the blood or tissues, although present in the stomach. This was the point urged against the state in the case of *Regina v. Palmer*,¹⁰ and if death results from the administration of a minimum dose and the stomach is not examined for some time after death the poison may not even be found in the stomach. This poison is eliminated from the body chiefly by the kidneys, and its presence in the urine may usually be readily demonstrated even when fairly small doses have been taken, and therefore the examination of the urine for strychnine is very important as a means of verifying the presence of the poison in the system. The elimination by the kidneys is rapid and the poison is usually eliminated from the body within forty-eight hours.

¹⁰ *Ante*, § 165.

Another narcotic irritant is aconite, which, like most of the poisonous alkaloids, does not produce any decidedly characteristic post mortem appearances. The stomach and intestines are generally more or less reddened, there is congestion of the lungs and liver, and an injected condition of the blood vessels of the brain and its surrounding membranes. The right side of the heart usually contains more or less blood, and throughout the body the blood is generally dark in color and abnormally fluid. Owing to its exceedingly poisonous nature, the smallness of the dose required to produce death, and the somewhat uncertain character of the present tests for its recognition, it might be criminally administered and leave no positive evidence of the crime; especially would this be so if the dose was small and administered hypodermically. What may be called characteristic symptoms of aconite poisoning are numbness of the tongue and throat, attended with vomiting.

Others of this group are lobelia, cedar oil, yew, oil of tansy, coeculus indicus, belladonna, of which widely dilated pupils are characteristic; cinchona, daphne, mezereum, hydrate of chloral, white and green hellebore and digitalis. As to this last substance, there are at present no conclusive chemical tests, and the examiner will be obliged to depend chiefly upon the physiological effects of the drug in making post mortem examinations. The principal means of determining the presence of this poison is found in the well-known gastro-intestinal symptoms and the remarkable slowing of the heart's action shown when it is administered to the lower animals.

The *poisonous gases* are carbonic acid, carburetted hydrogen or ordinary lighting gas, sulphuretted hydrogen and nitrous oxide.

§ 167. Medical evidence in poison cases—Effect of physical condition—Transmission of arsenic through milk—Diseases and poisons—Poisonous food—Detection of poison.—The medical evidence in cases of suspected poisoning is derived from several sources; such as the symptoms, the post mortem appearances, chemical analysis, experiments on animals, and moral or circumstantial evidence. All of these must be investigated in the light

of the known effects of poisons in other well authenticated cases, and the well-known effects of criminal acts on the human conscience, as shown by the actions of the guilty party.

As attempting to poison is a crime the same as succeeding in poisoning, the symptoms attendant upon the administering of the various kinds of poison should be fully understood. This not only for legal reasons, for the purpose of punishing the guilty in cases where death does not result; but for medical reasons for the purpose of determining the remedy, the symptoms produced during life constituting an important part of the evidence in those cases where the poison proves fatal. It is the common characteristic of most poisons when administered in large doses, as they generally are when administered with criminal intent, to produce serious symptoms either immediately or within a very short period after they are swallowed. Their operation under such circumstances can not be suspended, and manifest itself after an indefinite period, as was formerly supposed could be done by what was called slow poisoning. Where prussic acid, oxalic acid or strychnine have been given the symptoms appear immediately or within a few minutes. A small dose of prussic acid, not sufficient to cause death, is reported not to have produced any symptoms for fifteen minutes; but such an occurrence is so rare as to make it noteworthy.¹¹ Arsenic and other irritants act in from half an hour to an hour. Some narcotico-irritants may remain in the stomach from twelve to twenty-four hours before producing any symptoms; and the same is said of some animal poisons, such as decayed meat; in cases of poisoning by phosphorous the symptoms do not appear for several hours.

As already said, a diseased state of the body may render a person comparatively proof against some poisons, and again may render him peculiarly subject to their effects and produce fatal result when administered in small doses. This peculiarity is illustrated by the well established facts that in dysentery and tetanus a person may take without ill effects a dose of opium which would kill an adult in average health; and that mania,

¹¹ Taylor's Medical Jurisprudence, p. 25.

cholera, hysteria and delirium tremens are diseases in which the same apparent immunity to opium is found. On the other hand, persons predisposed to apoplexy very speedily die from a small dose of opium; inflammation of the stomach or bowels renders a person peculiarly susceptible to the action of arsenic and other irritants, and in cases of diseased kidney (granular degeneration) a very small dose of mercury has been known to produce severe salivation, followed speedily by exhaustion and death.

As a general rule, however, whenever a man in apparently full health is suddenly overtaken with serious and increasingly alarming symptoms, soon after having taken some food or drink, with violent pain, cramp in the stomach, nausea, vomiting, convulsive action and a sense of suffocation; or when, in the absence of vomiting and diarrhea, a complete prostration of the vital forces, a cadaverous expression of countenance, and an abundant perspiration suddenly appear; or, under the same circumstances, there is vertigo, giddiness, delirium and unusual drowsiness, soon followed by death, there is good reason to suspect poisoning. But all these symptoms may be the effect of sudden illness occurring in healthy people, the exact cause of which may not at first sight appear. The physician will, therefore, see that while symptoms constitute a very important factor in the diagnosis of poisoning, *alone* they can never be sufficient to establish the charge, there being no characteristic symptoms of any poison.

First, the physician should satisfy himself that no sporadic or epidemic disease prevails in the vicinity, resembling in its symptoms those manifested by the patient; then inquire into the patient's strength, mode of life, habit of body and whether he had previously complained of ill health; ascertain, as near as may be, the time at which it is supposed the poison was given; in what it was given; if any odor was observed or peculiar taste spoken of at the time it was given, and the food or drink recently taken. But when all these facts, or such of them as can be, have been ascertained, he should not hastily form an opinion. Poisons are generally characterized by the rapidity with which the symp-

toms follow each other and by their steady progress to a fatal termination.

When death does not ensue it is often difficult to clear up such cases, but when death ensues the post mortem will generally reveal whether the attack and death were the result of disease or poison.

A nursing child had what was supposed to be cholera infantum and died, the mother soon after being similarly attacked. Her husband quarreled with her and her mother in regard to the disposal of some property, but his agency in the matter of this sickness was not suspected. Subsequently the wife and her mother had another attack, and then their suspicions were aroused; instituting an investigation, a white powder which proved to be arsenic was found in the husband's pocket. An expert chemist being called, had the body of the child, then six months buried, exhumed and brought to Paris. It was so far decomposed that he could not dissect the viscera; he therefore analyzed the entire body and found arsenic in such quantities as would have killed a child a year old, and satisfied himself that it had been introduced into the system during life. He then experimented to determine how far arsenic could be eliminated from the mother through her milk, and ascertained that milk is a channel with such a decided predilection for arsenic that it would not be prudent to administer it to nursing mothers, and in this way he explained the death of this child.¹²

A very celebrated poisoning case was that against Mrs. Minnie Walkup for killing her husband with poison less than a month after they were married. The evidence showed clearly that death resulted from arsenical poisoning, and the symptoms indicated the same. The stomach was red and inflamed and the inner coat of one of the larger intestines was eaten away; the liver was fatty and arsenic was found in the stomach and liver. The physicians and chemists agreed in the belief that death was due to arsenic; that it had been administered three times during the fatal illness, the last time the Thursday before the Saturday on which he died; this last upon the theory that arsenic could not

¹² 3 Medico-Legal Journal, p. 340.

have remained in the stomach more than thirty-six to forty-eight hours after taking before death. The testimony also showed that the wife had purchased both strychnine and arsenic before her husband's death; four ounces of arsenic the Thursday before he died. She claimed to want to use it for a cosmetic, and it was shown that her husband knew of her purchasing the arsenic, the subject being discussed by them in the presence of others. The evidence further showed that her husband was a man of very bad habits and had been taking arsenic for years to relieve him from pains caused by his excesses; that his fatal illness was similar to an attack that he had had two years before, when he had used arsenic and strychnine; that arsenic was a remedy for diseases brought on by excesses, and that it could become encysted and remain in the stomach for a considerable time. Mrs. Walkup was acquitted.

It is so common a practice to substitute a poisonous mixture for the medicine left by the physician that it is important to warn physicians that it is not necessary, in order to clear themselves of suspicion, to swallow the medicine or what they suppose to be the medicine. An apothecary filled a prescription into which another put poison. The patient, not liking the taste of the mixture, sent it back, and the apothecary, confident that he knew what it contained, drank it, and speedily died. That the man who put the poison in the medicine was afterward condemned and executed for murder, although he did not intend to murder the apothecary, was small satisfaction to the surviving relatives.

In another case a mother, having heard that she was suspected of poisoning her daughter, said: "I gave her one spoonful of this medicine; I will take two to prove it isn't poisonous." But she only proved that it was.

Trust the medicines to chemical tests, rather than to personal tests.

When several persons who have partaken of the same food are attacked at the same time with similar violent symptoms, soon after eating, it is very likely to be due to the admixture of poison with the food; and yet during the prevalence of malignant cholera this may be due to their being stricken with cholera at the

same time. The exact reverse of this occurred near Venice a number of years ago. During the prevalence of cholera all the pupils in one of the schools were poisoned by reason of the cook using hemlock leaves in mistake for parsley. Naturally, the sudden symptoms were ascribed to cholera, and, being doctored for that disease, fifty of the children died.

Sometimes the food of which a person has partaken may produce symptoms similar to those of poisoning; the foods most likely to bring about such a result are decayed or diseased meat, certain kinds of shell fish, pork and the like; but it generally happens that not more than one or two of those who have partaken of the food are attacked, and frequently these are persons who have previously escaped any ill effects by reason of eating similar food. These are really cases of poisoning by an animal or vegetable irritant.

A new field for the medical expert in poisons has been opened by the decision of the Supreme Court of Georgia that where a patent medicine is put on the market, accompanied by directions for its use, and it is shown to contain poisonous matter enough to injure a person who takes the dose as directed, the proprietor is liable for the injury, even though the purchase was made not of the proprietor, but of a druggist.¹³

One of the strongest proofs of poisoning in a living subject is the detection of the poison, by a chemical analysis or a microscopical examination, in the food partaken of or the matter vomited. Of course, the evidence is much more conclusive if the poison is found in the matter vomited; but if this matter has been thrown away the remainder of the food should be examined. If, upon examination of the remainder of the food and the matter vomited, no traces of poison are discovered, the physician will be safe in concluding that the symptoms arise from some disease, provided always that his investigation has been thorough.

The physician must also remember that poison may be introduced into food and also into matter vomited up for the purpose

¹³ Blood Balm Co. v. Cooper, 83 Ga. 457, 10 S. E. 118, 5 L. R. A. 612, 20 Am. St. 324.

of feigning poisoning; but it requires a skilful person to feign the symptoms of poisoning so as to deceive a physician at all familiar with poisons. He cannot be mistaken where the patient really labors under the usual symptoms of poisoning and where the matter is actually vomited into a clean vessel in his presence or that of some person on whose testimony he can rely.

Having reached the conclusion that a poison has been taken or administered, the next step is to determine to what class it belongs. When the patient says that he noticed that the food or drink, which was its vehicle, did not have its ordinary taste; that he felt a heat, an irritation or an extraordinary and sudden dryness at the root of the mouth and æsophagus, with a sense of strangling or constriction in those parts; and if these symptoms are followed by a great desire to vomit, with sharp pains in the stomach and intestines, great thirst, copious discharges by vomiting and by stool, accompanied by tenesmus and followed by hic-cough, a sense of constriction across the diaphragm and difficulty of breathing; if there be great pain in the region of the kidneys, followed by strangury, convulsions, cramps of the hands, trembling of the lips, extinction of the voice, repeated faintings, cold sweats and a small, chorde and irregular pulse; and if in addition to these symptoms the intellectual faculties remain clear until near death, the physician may conclude that an irritant poison has been taken into the system.

On the other hand, a narcotic poison produces the following effects: Stupor, numbness, a great inclination to sleep, coldness and stiffness of the extremities, a cold sweat of a fetid or greasy nature, swelling of the neck and face, protrusion of the eyes, with a haggard cast of countenance, thickening of the tongue, frequent vertigo, weakened eyesight, or objects are presented to it in a fantastic manner, coma, delirium, general debility, palpitation of the heart, the pulse at first strong and full, but afterward unequal and intermittent, paralysis of the lower extremities, retraction of the lips, general swelling of the body, dilatation of the veins and at the end sometimes slight convulsions and pain.

CHAPTER XIX.

POISONS—CONCLUDED.

§ 168. Diseases resembling poisoning—Effects of poison—Examination for poison.—The diseases most apt to be mistaken for cases of irritant poisoning are: cholera, bilious cholera or cholera morbus, perforation of the stomach, gastritis, gastroenteritis, peritonitis and strangulation of the intestines.

§ 169. Sources of information—Isolation of poison—Action of poison—Value of chemical tests—Natural changes after death.

§ 170. Inferences from post mortem appearances—Imbibition of poison—Care in post mortem—Pota-

maines.

The symptoms attendant upon narcotic poisoning are similar to those attendant upon apoplexy, epilepsy, cerebro-spinal meningitis, congestion of the brain and tetanus.

Narcotico-irritant poisons, as might be judged from the name, cause, when administered, a combination of several of the foregoing symptoms. Their administration is attended with agitation, pain, acute cries, sometimes stupor and convulsive motions of the face, jaws and extremities, vertigo, and occasionally extreme stiffness of the limbs and contraction of the muscles of the thorax, the eyes red and starting from their sockets, the pupils often dilated, mouth full of foam, tongue and gums livid, nausea, vomiting and frequent stools; these symptoms often attack in paroxysms, and, when these pass away, the patient is left comparatively easy for a few moments.

This statement of the different classification of symptoms would seem to make it very easy to determine to which class of poisons to assign the one administered, but this is not so. There are substances very distinct in their characters which produce similar effects, and a perfectly harmless substance may produce all the symptoms of poisoning, and the same poison will produce different symptoms on different persons. Many causes may bring

about this difference in the symptoms; thus, poison given in a liquid form is generally more marked and rapid in its effects than when given in a solid state, and substances previously or subsequently taken may also modify the symptoms.

As an illustration of what may happen, a case is reported of a woman sixty years of age, who ate a paste compounded of milk and arsenic and died in twelve hours without having suffered any severe pains or convulsions.

The vomiting or not of the patient has the greatest influence on the course and variety of the symptoms. Many persons vomit readily, while others will almost be thrown into convulsions by the effort to vomit. In the former case the poison may be rejected before it has time to produce any serious injury, while in the latter death is inevitable.

Too much poison may be administered, thus producing such violent vomiting as to throw it all off.

Large doses, if not too large, produce their effects presumably early and violently, and the stomach endeavors to reject them as soon as received, while small doses seem to have time to act not only on the system generally, but also on the structure of the parts. Thus, a young man swallowed an ounce and a half of arsenic immediately after a hearty meat supper. He was seized instantly with violent vomiting, succeeded by spasms, but he was fully restored in three or four days.

But this examination of the symptoms is only the beginning of the examination. Examine and put to one side all phials, boxes or papers containing powders. Get all the information possible from the patient and be careful that what is left of the drink or food last partaken of shall not be thrown away. If none of it remains, the matter vomited, especially that first vomited, and the cloths or sponges used to wipe up what may have been deposited on the floor should be preserved, and an amount amply sufficient for analysis should be sealed up by the physician for future use.

Inquire as to the time of appearance and nature of symptoms; how long after a meal or after taking food or medicine they manifested themselves: the order of their occurrence; whether there was any remission or intermission in their prog-

ress, and whether they became more and more aggravated until death, if death ensued; whether the patient had been sick; whether the symptoms were more violent after a particular meal or after any particular food or medicine had been taken; whether the patient vomited; note the color, odor, acid or alkaline reaction of the matter vomited, and also the quantity; if none of this matter can be obtained, take a portion of the dress, carpet or bed-clothes on which the vomited matter has fallen; if the matter was vomited on a wooden floor, a portion of it should be scraped up or cut out; if on a stone pavement, a clean piece of cloth or a sponge soaked in distilled water may be used to remove the traces for analysis; if the vomiting was in a vessel, an examination of that may be valuable, as heavy mineral poisons either sink to the bottom or adhere to the sides; try to find out the nature of the food or medicine last taken and the *exact* time when taken and *all* the articles of food used at the meal; take down all explanations voluntarily made by the persons present or those suspected of the poisoning; find out how many persons partook of the same food or medicine, and whether all were affected and how; also whether the same kind of food or medicine had been previously taken by the patient or others without ill effects. If the taking of the poison has resulted in death, in addition to the foregoing facts to be ascertained and noted the physician must observe the following: The *exact* time of death, so as to determine how long the patient survived after the first attack, the attitude and position of the body and the condition of the dress as well as all surrounding objects; observe whether the vomiting has taken place while the patient was in a recumbent position or otherwise; if the patient vomited when in an erect or sitting position the vomited matter will commonly be found on the front of the dress; examine carefully the mouth, cheeks, tongue and fauces, and also the clothing for stains of the mineral acids; notice whether there is any odor of prussic acid, opium, alcohol, nicotine or phosphorus about the body; these odors are more perceptible on opening the body, and if it is a case of phosphorus poisoning the white fumes, luminous in the dark, as well as the garlic odor, will often be perceptible. Observe whether the surface of the body is livid or pallid and the state of the counten-

ance; look for all marks of violence on the person or disarrangement of the dress, marks of blood, etc.; whether the legs, arms, abdomen, mouth and armpits are warm or cold; the presence of rigidity or cadaverous spasm in the body, remembering that the nature of the floor on which the body is lying and the fact of the body being clothed or naked, that of a young or old person, emaciated or otherwise, may make a difference in regard to the coolness or rigidity of the body. Ascertain whether any enmity existed between deceased and any person who attended upon him or served him with food, or if any such would or might profit by his death; if so, inquire if any poisonous substances have been recently purchased; whether these are still in the house, and secure the *original* package if possible; whether anything has been given without the orders of the physician; if there was any haste about embalming or the funeral; interference with inspection of the body or false account of the last illness; if the deceased is a female examine to see if seduction and pregnancy may not have furnished a motive for the crime; if the person was found dead, inquire when he was last seen alive, and observe whether there are any circumstances indicating suicide rather than murder.

The length of time after death at which an inspection is made is important to be known; observe the state of the abdominal viscera; if the stomach and intestines are inflamed, note exactly the seat of inflammation; also all marks of softening, ulceration, effusion of blood, corrosion or perforation. Remove the stomach and place it in a vessel by itself, securing the ends; in the examination of the stomach it is best to open it along the lesser curvature, and after carefully collecting and measuring the contents, to spread it out upon a clean pane of glass, with the mucous surface outward; it should then be carefully inspected, with the aid of a magnifier, and any abnormal appearance noted; and search should be made for foreign substances, such as crystals of arsenic, fragments of phosphorus, suspicious powders, pieces of vegetable matter, etc.; all these to be subsequently examined with the microscope; the contents of the stomach should be placed in a clean graduated vessel, and at the same time the odor should be tested by several persons, and the color; the acid or alkaline reaction,

the presence of blood, mucous or bile and undigested food should be observed, and a careful inspection made for the remains of any poisons; the contents of the duodenum should be carefully collected; remove the liver, spleen and kidneys for analysis; observe the state of the large intestines, especially the rectum, and note the condition of their contents; and remove the lower as well as the upper portion of the alimentary canal.

Prof. Chittenden, of New Haven, in reporting the results of his examination of nearly one-half of the entire muscle and bone tissue of Jennie Cramer, whose body was found in the shallow water of the marsh near New Haven in August, 1881, and disinterred six months after burial, for the purpose of ascertaining the amount of arsenic in the body, said that "in chronic poisoning, or when the arsenic has been in the body considerable time before death, the kidneys indicate it clearly, while in Jennie Cramer's case the amount of arsenic in both kidneys was only .029 of a grain, while there was nearly three times as much on the tongue and in the throat, which indicated to him that the poison was administered shortly before death."

He further said that "while the finding of arsenic in the brain amounts to almost positive proof that the poison was not introduced into the body after death, on the other hand, in cases of poisoning with arsenious acid, the absence of a detectable amount of arsenic in the brain in no wise proves that the poison was not taken prior to death."¹

Arsenic, when taken in a very soluble and diffusible form, without doubt does accumulate in the brain, but *only when in that condition*, and in the more common form of poisoning with the white oxide or other insoluble forms of arsenic, but a trace of the poison is to be found in the brain at any time; and therefore the physician ought never, under any circumstances, to find an accumulation of arsenic in the brain after the administration of an insoluble form of the poison.

What may prove a circumstance of considerable importance is the finding of hardened faeces in the rectum, as this would indicate that there was no purging immediately before death; ob-

¹ 1 Medico-Legal Journal, p. 242.

serve if there are any marks of inflammation or corrosion or any indications of the presence of foreign substances in the larynx, fauces and œsophagus, as in this way the physician may discover whether the poison was an irritant or corrosive, and whether or not it had any local chemical action; note the condition and all morbid changes in the thoracic viscera, the state of the brain and of the genital organs; and the urine should always be examined in cases of suspected antimonial poisoning.

While making these special examinations remember that it is often quite as important for the physician to be able to testify that the patient did not die from a natural cause as to testify that he died from poison. Therefore examine all the important organs for traces of natural disease and note any unusual pathological appearances or abnormal deviations. As is well known, some women use arsenic tablets for the complexion, and they may take so much that the soft parts become impregnated, and therefore there is danger that the examiner may be deceived on the post mortem by finding arsenic.

A lawyer defending an alleged poisoner will, unless there are no reasons for supposing his client guilty of the crime, direct his questions, or rather, cross-questions, in such a way as either to convince the jury that the deceased came to his death from natural causes, or else that the post mortem was so carelessly made that the attending physician could not tell whether the organs of the body were in a normal condition or otherwise; and in either case he could and would claim to the jury that the death resulted from natural causes.

A physician may be called upon to make an examination of a body for poison long after interment, and if he is, he should be sure, before he begins to make the examination, to have the body identified in his presence by some relative or friend. So long as the coffin remains entire he may reasonably expect to find traces of mineral poisons, if any have been administered, and his examination will probably be confined to the abdominal viscera. In such a case he should remove the stomach and duodenum, applying ligatures to each; also the liver and spleen, as he may desire to examine them. He should seal up whatever he removes, imme-

dately, in a clean glass or porcelain vessel, and should be sure they do not come in contact with anything else.

§ 169. Sources of information—Isolation of poison—Action of poison—Value of chemical tests—Natural changes after death.—In all examinations for poisons the examiner should have three sources of information:

First: The nature of the symptoms preceding death. These may be misleading and at best only establish a strong probability, and therefore no reliance can be placed on the symptoms alone.

He will doubtless encounter difficulty in finding out what the symptoms were, either because those who witnessed them are so ignorant that they cannot describe them to him, or because they are unwilling to tell him anything about them.

There is always the chance that the poisoner may be the one among them who was the closest observer.

The similarity of symptoms arising from a great many different poisons will add to the uncertainty.

This is the least reliable source of information, but in its way valuable.

Second: An examination of the viscera at the autopsy.

Their condition can only establish a presumption, owing to the necessity for such nice discrimination between the effects of poisons and some diseases. If the autopsy is not made immediately after death, the natural decomposition of the tissues of the body may often conceal the pathological condition of the viscera.

Third: The most reliable is the discovery and demonstration of the poisonous agent. And yet this should be considered in connection with the two other sources of information just referred to. A knowledge of chemistry and taking such a poison as atropine, of which the only reliable test of its presence is its local action upon the pupil of the eye in a living animal, a knowledge of physiology likewise is necessary in pursuing this line of investigation.

If the poisonous agent can be isolated from the tissues of the body so that the jury is convinced that it is or was there, and enough of it is found to occasion death, then may the surmises be accounted almost facts.

"The last element to prove poisoning is the finding in the body of the victim of a substance capable of causing death. This, however, cannot serve as perfect proof, since there would still be reason to search whether or not the presence of the suspected substance could be explained by another cause than poisoning. Chemistry can generally extract from the body of a person who has died from poison the poisonous substance which remains in the organs; this substance is not always in such a condition that it can be isolated, and yet its presence can be proved by its physical and chemical characteristics; and this putting in evidence, by experiments on living animals, the poisonous properties of the substance obtained from the corpse will achieve the result of showing that it is really the true cause of the violent death and that it is a case of poisoning."²

To establish the presence of a poisonous substance in the body in sufficient quantity to destroy life, and that in fact it did destroy life, needs not only the evidence of a practicing physician, but also that of a competent chemist, a microscopist and a practical physiologist; the combined experience of these scholars and their observations will lead to a more faithful comprehension of symptoms caused by poisonous agents, and perhaps to a determination of causes which might otherwise remain doubtful.

Though chemistry is such a useful agent in cases of suspected poisoning, yet it cannot always so isolate it as to permit the jurors to touch it and be certain that it is identical with similar substances. This can generally be done with such poisons as arsenic, mercury, copper, and with less certainty of strychnine; but the chemist cannot expect to separate an appreciable or ponderable quantity of digitalis, aconite, atropine and a host of similar alkaloids from a mass of organs so that a jury could determine its similarity to a crystalline alkaloid produced in court.

Under the microscope it is often possible to identify a specimen of arsenic by carefully studying (a) the percentage of crystals, (b) their size and diameter, and (c) their surface, striations, brilliancy, etc. This was attempted, with very considerable

² Wharton & Stille (1st part), § 326.

success, by Prof. E. S. Dana, of New Haven, in the famous Mary Stannard (or Hayden) trial, where he tried to show, first, that the arsenic found in the girl's stomach was identical with that bought by Mr. Hayden a few days before; and, second, that the package of arsenic claimed to have been bought by the defendant a few days before in the neighboring town had, in fact, come from a different locality. The microscopic appearance is altered to some extent by soaking in water and other fluids, but often not enough to spoil this examination.

Appropriate chemical reactions and physiological experiments should demonstrate whether the substance examined is poisonous, and proof should be adduced that it was found in some organ or tissue of the deceased. There is nothing more common now than for the defendant in a poisoning case to employ a chemist to criticise and if possible destroy the testimony of the state's experts. This is generally done by getting up ingenious questions, the only purpose of which is to confuse and distract the jury and the court by intimations and insinuations as to the competency and reliability of the state's witnesses.

"For self-protection the chemist should have an associate to testify to the accuracy of the methods employed, the purity of the chemical reagents and the cleanliness of the vessels used. Where volatile poisons, such as prussic acid, chloroform, etc., or alkaloidal poisons, as strychnine, morphine, belladonna and the like, are searched for, as the quantities discovered are small and often cannot be exhibited in court, it is the more essential that at least two experts should conduct the lengthened and elaborate investigation and witness the changing color tests, and especially the characteristic reactions which distinguish them from those given by ptomaines and leucomaines, which are formed in the human body. In metallic poisoning cases the metal or metals should be presented to the jurors, also their distinguishing combinations; sometimes the crystalline forms of their compounds may be shown under the microscope."¹

Generally the action of one poison is different from that of another.

¹ Dr. R. Ogden Doremus, *The Forum*, Vol. 16, p. 238.

Certain poisons act directly upon an organ with which they may be in contact, and from this the inference arises that their action is local. Others are immediately absorbed, without at first producing any direct effect, and, being carried through the different parts of the body by the circulatory system, produce their impressions upon certain parts of the nervous system, and then react upon the other organs. Thus the inference arises that their action is general. And other poisons act not only locally, but also generally. Some of these act upon a special organ and in a particular way. For example, tartar emetic produces an inflammation of the pulmonary and intestinal mucous membrane; corrosive sublimate irritates the valves and internal tissues of the heart; cantharides and squills act upon the urinary and genital organs; strychnine upon the spinal chord. And this is true of these drugs, no matter how they are introduced into the system, for a poison may be administered by injection and yet be detected by the tests referred to.

All poisons act by absorption and are carried by the blood through all the tissues. They are eliminated by the excretory fluids and on the ratio of elimination to absorption depends the activity of the poison. Unless the drug is absorbed more rapidly than it is eliminated, no symptoms of its action will appear. Belladonna is eliminated very rapidly by goats, and prussic acid by horses, hence it is almost impossible to destroy their lives by these drugs.

The least fallacious of all the means for verifying the fact of poisoning is chemical analysis. It is however erroneously supposed that a case of poisoning cannot be made out without the production of the poisons as the *corpus delicto*. All that the law requires is satisfactory proof of death by poisoning, and this in certain cases can be afforded without the chemical detection of the poison.

To sustain an indictment for poisoning.

First: It must be proved that the deceased died by poison. This may be shown by one or two kinds of circumstantial evidence, either (a) by analysis of portions of the body or of substance known to have entered the body, or (b) by the observed symptoms, and appearances before and after death.

Second: It must be proved that the poison was administered by the accused or by his agency. Direct evidence of this fact being rarely obtainable, circumstantial evidence must generally be relied upon. This circumstantial evidence consists of a group of four subsidiary facts from which the existence of the principal fact—the defendant's guilt—is to be inferred; (a) previous possession of the poisonous substance; (b) opportunity of administration; (c) antecedent possibility or probability, including motive and expressed intention and (d) impossibility or improbability of administration by other agencies.

Third: It must be shown that the accused administered the poison with knowledge of its probable effects.

If all the other factors of evidence are perfect, the symptoms, the post-mortem appearances, the effects on living animals and the moral evidence, then the chemical analysis is not necessary to prove the crime. For some poisons there is no certain chemical test, especially for those derived from the animal and vegetable kingdom; and then the circumstances may be such that a proper chemical examination cannot be made. Therefore it follows that every case does not require and, indeed, cannot always furnish the chemical demonstration, but it is not on this account fatally defective.

The chemical examination should be conducted by a competent chemist, who is not only thoroughly versed in this science, and capable of conducting the analysis with system and accuracy, but also capable of sustaining his testimony in regard thereto against the numerous objections which may be raised on the subsequent trial.

In all cases of poisons for which there is a known chemical test, except where the poison is of a volatile character or is liable to destructive decomposition, chemical tests are applicable and yield a positive result at considerable periods after death. The substance or liquid used for chemical analysis may be either a portion of the drug remaining unconsumed, or the food in which the poison has been taken; it may be matters rejected from the stomach, or the secretions by which the drug is eliminated from the system; or the contents of the stomach as found on the post-mortem; or the viscera, or the blood, where it has arrived by ab-

sorption. When a competent chemist, conducts the tests, the chances for mistakes are few. They arise chiefly from the possible accidental impregnation of the reagents or of the substance to be examined with the mineral poison sought for or the existence of the poison as one of the natural constituents.

Other objections to be met, are those arising from a faulty manner of conducting the investigation, or to an over hasty inference after a too limited number of tests. But these can never be successfully raised, if a competent chemist is employed, for a *competent* chemist implies one who is not over hasty either in conducting his investigation or in drawing his inferences; and he will also carefully guard the matter under investigation from harmful admixtures.

The quantity of the supposed poison is of great importance in estimating the value of the chemical tests. A substantial portion of the supposed poison should be extracted so that it may be recognized, not only by its behavior with different reagents, but by its physical qualities; the form of its crystals, if any; its taste, smell, etc. In addition to all this, the only value of chemical analysis in judicial questions, when its results are positive, is to corroborate the evidence derived from the symptoms during life; and unless this evidence points to the same cause of death as that which is indicated by the symptoms, it would be most unjust to conclude that a crime had been committed.

There is another error into which an examiner may fall if he is not very careful, or has allowed himself to be convinced *before* he has made the post-mortem and that is: forgetting the result of the natural changes which take place after death in those organs ordinarily examined for evidences of poisoning, and thereby mistaking their natural appearance for pathological changes induced by the administration of poison. "Nothing," says one writer on poisons, "is more common than to meet with the expressions that 'the stomach and intestines were red and inflamed,' 'the mucous coat corrugated,' 'the brain was highly congested,' 'the blood of a dark color and fluid, etc.'; statements which are objectionable, not only on account of their want of precision, but because they may be predicated of conditions perfectly natural and healthy."

The following observations of Dr. Yelloly are very proper to be considered by the examiner in connection with the foregoing:

First: Vascular fullness of the lining membrane of the stomach, whether florid or dark colored is not a special mark of disease, because it is not inconsistent with a previous state of perfect health.

Second: The effects of putrefaction and spontaneous changes, induced by the loss of vitality, are sometimes attributed erroneously to the action of poisons.

Third: The vascularity in question is entirely venous—the florid state of the vessels arising from the arterial character of the blood remaining for some time in the veins after its transmission from the arterial capillaries at the close of life; the appearance, however, is sometimes due to transudation only.

Fourth: The fact of inflammation having existed previously to death cannot be inferred merely from the aspect of vessels in a dead part—there must, at least, have been symptoms during life.

§ 170. Inferences from post-mortem appearances—Imbibition of poison—Care in post-mortem—Ptomaines.—The stomach presents different appearances, depending on whether it is inspected during or after the process of digestion, or after long fasting; whether it is full or empty, distended or contracted, and whether the distension is due to liquids or air. During and immediately after digestion, the stomach is distended and contains air and the remains of food, and its mucous membrane does not lie in folds but looks thin. Its color is a pale rose uniformly spread over the surface, unless it is distended unusually when its color is gray or dirty white. In a fasting condition the stomach is contracted and the mucous membrane is corrugated and thick; the color is ashen gray, if it is covered with mucus; otherwise it is reddish-brown. If it is partly contracted and partly distended, the examiner will notice the same differences in the pyloric and cardiac portions. The settling of the blood after death will be seen in the folds of the mucous membrane, or in those portions of the stomach which are least distended. After digestion is completed the abdominal system of veins is full of blood, as is the case in

some diseases of the heart and lungs; then if death ensues the examiner will find the mucous membrane of the stomach highly injected and by reason of the transudation of liquids in the dead body ecchymoses are formed, which look like submucus extravasations, occupying frequently half of the stomach and both curvatures and having a bluish slate color. This injection may also occur in streaks, giving rise to the suspicion (unfounded, however) that death resulted from the administration of some irritant; and this is especially so, when powdered substances such as arsenic are found near them; but the existence of the folds explains the adhesion of the powder to such places. The softening of the mucous coat, depending on the solvent powers of the liquids contained in the organ, is found in a greater or less degree. This mucous coat may be, apparently, thickened by the contraction of the stomach, and appear to be thin by reason of its distension.

Similar sources of error await a cursory examination of the brain and other organs.

Carefully distinguish the changes made in a dead body by disease, from those produced by the act of dying, or after death, by the position of the body and the transudation of liquids. The examiner when testifying should use precise and proper language to describe the post-mortem appearances and give the physical condition of the parts with size, color, consistency, etc., rather than use terms implying the manner in which the morbid change has resulted, as gangrene, inflammation, etc.

Although death may have resulted from poison, it is not always possible for the chemist to discover poison in the dead body; it may have been thrown off by vomiting or purging, or if the victim lived long enough, it may have been absorbed into the system and the most of it eliminated by the urine.

Vegetable poisons rapidly volatilize, decompose and are absorbed; and to offset that, the symptoms in such cases ought not to be mistaken for the effects of disease; if they are, the post-mortem will show the fallacy of such an assumption.

Another important subject for consideration and investigation is the imbibition of poisons, regarding which there has been of late years much discussion and until quite recently much differ-

ence of opinion among alienists. Although the great Orfila, as far back as 1847, alludes to the fact of such imbibition, based upon his own experiments upon animals, and admits that it might be practiced upon the human body for the purpose of arousing an unjust suspicion that the death was caused by poison, and Sir R. Christison admitted the same thing, although he had never himself heard of a single case, yet neither of these distinguished scientists thought it worthy of more than passing notice, nor did it occur to either of them that it might be made use of for the purpose of concealing the fact that the death had actually been caused by poison. Though these views were necessarily well known, so little impression did they make upon students and writers that Wharton & Stille, in their work on Medical Jurisprudence published in 1873, said: "Its consideration is not required until some authentic instance of the fact can be produced. This is one of the chimeras of medical jurisprudence, which the ingenuity of authors has evoked, but whose existence is fabulous, if not absurd."⁴ In a case tried in Michigan in 1883 the experts were equally divided as to the possibility of the imbibition of poisons.⁵

In 1885 a writer on the subject said: "It will remain a very nice question for research, as to whether science can demonstrate whether the arsenic was taken before death and contributed to it, by the manner of its absorption and distribution in the system; and what, if any defined differences can be found in the cadaver where death resulted from poison taken during life and where the arsenic was subsequently injected, by mouth or rectum, or directly into the abdominal cavity or the main arteries."⁶

In 1890 it was so well settled that imbibition of poisons was possible that few experts denied it. They said that osmosis was the rationale of it, and that wherever the toxic substances traverse the body, there they are found identical in composition with the same substance as it is discovered on the surface or near the open cavities of the cadaver.⁷

⁴ 2 Wharton & Stille (1st part), § 331.

⁵ Journal Amer. Med. Assn. 1883.

⁶ 3 Medico-Legal Jour., p. 135.

⁷ 8 Medico-Legal Jour., p. 176.

It is therefore clear that with the help of the undertaker and his embalming fluid the poisoner is afforded another way of escape from detection; and because of this the inquiry into the symptoms preceding the death should be more carefully and searchingly made.

Dr. Reese and other alienists having urged that the presence of poison in the urine and in the brain would be almost positive proof of ante-mortem administration, Dr. George B. Miller, of Philadelphia, conducted a series of experiments upon dead animals in the following careful manner: The gullet was exposed by making an incision in the median line of the neck just below the larynx. Into the oesophagus a longitudinal incision was made, a ligature placed immediately above the incision: into the opening thus made a tube was passed through the gullet into the stomach. After the gullet was tightly secured to this tube, the arsenical solution was poured into this receptacle, the tube then withdrawn and the lower portion of the oesophagus tied below the incision. In this way the possibility of regurgitation was guarded against and thus it was made certain that poison found in any organ must have reached it by imbibition or a soaking process from the stomach. The experiments were made on rabbits and examinations were made after the animals had been buried from thirteen to twenty-nine days.⁸

He sums up the results of his examinations and chemical analysis as follows: That indisputable evidence has been found, demonstrated by strictly scientific methods, of the fact, that when poison is introduced into the stomach it can actually imbibe, soak and diffuse itself into the various organs of the body and can be recovered from the liver, kidneys, spinal cord and interior of the urinary bladder; also that the chemical evidence should not be held in the highest esteem, and given the place of the highest importance; and that there are only very rare opportunities for the toxicologist to distinguish between ante and post-mortem poisoning. In this view it is the microscopist, with his knowledge of the histological and pathological appearance of the organs, who may be able by rigid search to discover some permanent

⁸ 5 Medico-Legal Jour., pp. 500, 506.

appreciable difference, since it is not improbable that there may take place certain specific changes in the histological constituents of an organ, due to the deposition of a substance like arsenic, through the medium of the blood circulation during life, which changes would not manifest themselves as the result of an after-death deposition.”⁸

As to this last point Prof. Henry F. Forward, of Philadelphia, says: “The changes induced by arsenic in the living mucous membrane of the stomach are very characteristic. The mucous membrane is ecchymosed from minute hemorrhages peculiarly linear and stellate in appearance and definitely distributed along the course of the perivascular spaces within the swollen mucous membrane, sometimes called the alligator skin appearance, and differing widely from that caused by other irritants, and from that met with in the ordinary acute gastritis. Some days after death, or out of the body for some time and in preserving fluids, this characteristic arsenical appearance vanishes to the naked eye, but is readily discernible under the microscope. The inflammatory changes in the living mucous membrane, and they are very peculiar in arsenical poisoning, are not destroyed even by time, and are quite plain under proper amplification. Poisons introduced into a dead body do not induce any histological changes in the tissue. Thus the microscope affords the means of discriminating between arsenical poisoning during life and the post-mortem introduction of arsenic, and should always be called to the aid of the chemist.”⁹

Dr. Miller also conducted a series of experiments with dead animals, in the same careful manner, with a solution of strychnine, to determine whether the same result would follow from the use of a vegetable poison, and found distinct traces of strychnine in the spinal cord, urine and liver.⁹

The diffusion will take place more readily if the injection is made soon after death.

The following is one of the latest utterances upon this subject and it must appear evident that it is important to always take into account the possibility of the post-mortem injection of poison.

⁸ 5 Medico-Legal Jour., pp. 500, 506.

⁹ 7 Medico-Legal Jour., pp. 241, 357.

"It has been demonstrated that within fourteen days after the injection of arsenical solutions such as are used for embalming purposes, into the cadaver, the arsenic will have penetrated from the stomach into every part of the body, including the muscles of the feet and legs, the hands, the arms, and every portion of the brain. It follows therefore that, if once the undertaker is allowed to enter the house, there is no chance of conviction, in arsenic poisoning. Thus arsenic, instead of being the most dangerous, is now, practically, the safest agent for committing murder. And unless the attending physician is clever enough to properly diagnose the case during life, and courageous enough to risk his own professional career by calling in the authorities, and insisting on an autopsy at once, there is practically no hope of conviction."¹⁰

In conducting chemical tests or analyses for the purpose of determining the presence or absence of poison, it is very necessary to use the utmost care in preserving the substances to be examined so that no mistake can possibly arise as to their identity and so that no foreign substance can be mingled with them.

All legal authorities insist most rigorously upon proof being adduced that the matters or liquids examined are the identical vomited matter or liquids taken from the dead body. While it is important, in cases where the examiner did not know the deceased, to have the body fully identified by others, with him will rest the responsibility of proving the identity of the substances and liquids examined.

If during the post-mortem he removes the stomach and viscera he should never place them on any surface or in any vessel until he *knows* the surface or vessel is perfectly clean; and never use any instruments that he does not know to be perfectly clean. This may seem comparatively unimportant, but remembering that the life of a human being is dependent upon the result of this investigation, the examiner must see that nothing that a shrewd or ingenious lawyer can make use of to save that life can be trivial. In one case a defendant was acquitted because the

¹⁰ A System of Legal Medicine. By Allan McLane Hamilton et al., Vol. 1, p. 385.

contents of a stomach were hastily thrown into a jar brought from a neighboring grocery; and neither the physician making the post-mortem nor his attendant could positively swear that the jar was clean and entirely free from poison, in which the grocer dealt.

It would embarrass the examiner very much, after a labored and exhaustive examination, and the use of known tests and experiments had demonstrated the presence of poison in the matter or liquids examined, if on the beginning of his examination he was unable to say whether the receptacles containing them were clean when he put them in; this would render his testimony worthless and his time and labor would be wasted.

Having prepared and used clean vessels, the next important step is so to preserve them, that there cannot possibly be any mistake in identifying them as the very substances coming from the body on which the post-mortem was held. They should never be out of the examiner's sight or custody. He should seal them up himself and keep them in a place to which no other person can have access. If two or three persons have them in their care or possession, it will be difficult to prove in what condition each one of them received them, and thus the evidence for the state will be weakened; and there is a possibility that in such a case the court will not allow the examiner's evidence to be given to the jury at all. Thus, where a country practitioner, being unwilling to trust himself to make the analysis, sent the suspected liquids to London to a chemist by the carrier, the court refused to allow testimony to be given as to the result of the analysis. If the jar or vessel had been closely sealed so that it could not have been opened without breaking the seal, and the London chemist had found the seal intact, it is probable that his testimony would have been received.

When any article, such as a stomach or other organ, is reserved for analysis, attach immediately to it, or to the vessel containing it, a tag on which should be written *in ink* the name of the deceased and the exact date of removal, giving the day of the week; especially should this be done when there are two or more articles for analysis.

Let the receptacle be wide-mouthed, and only large enough to

hold the viscera or liquid. If a tight-fitting cork, covered with fine skin or bladder, is put in, and another piece of skin or sheet rubber is tied over the mouth and covered with tinfoil and then with white leather, loss by evaporation or decomposition is prevented; and if the viscera are kept in a cool place they may be preserved for some time.

The post-mortem appearances of the viscera of an infant supposed to have died from poison were entirely destroyed by drying, where precautions like these were not taken and layers of paper were used for closing the receptacle. *Do not use any antiseptic.*

The examiner should make full notes of any post-mortem or analysis he makes, and if he is called upon for a report, let it embrace: First, the symptoms, if within his observation or knowledge; second, the post-mortem appearances; and, third, the results of the analysis.

When an examiner wishes to give the time of any occurrence it is well to write the day of the week as well as of the month and year; and remember that the report is not for himself, but others, and to be read in the future when references to yesterday and the next day will not be nearly so intelligible as the designation of them as days of the week.

He should confine his report to the subject or subjects of inquiry, which are generally: What was the cause of death? What are the medical circumstances which lead him to conclude that death was caused by poison? And what are the circumstances which lead him to conclude that death was not caused by natural causes?

He should base his report upon facts and not probabilities, and upon facts obtained by himself and not derived from others.

In reporting on a chemical analysis all of the following questions must necessarily be answered, either in the report or the mind of the examiner, and if any are forgotten it may be impossible to answer them after the completion of the analysis:

When, of whom and how was the liquid or solid received for analysis? In what state was it received—secured in any way or exposed? If more than one substance is received, each must be separately and distinctly labeled; the appearance of the vessel, its capacity, and the quantity of liquid (by measure) or solid (by

weight) contained therein must be noted. When and where did the examiner make the analysis, and where was the substance kept in the meantime? Did any one assist him in the analysis, and, if so, who? What were the physical characteristics of the substance? What was the general outline of the processes and tests employed for determining whether it contained poison? Supposing poison was found in the substance, was it in a pure state or mixed with some other body? He should note the strength of the poison, if an acid, or in solution, and in all cases the quantity of poison found. Could the supposed poisonous substances exist naturally, be produced within the body or introduced into the body after death? What quantity of the poison found is sufficient to destroy life, and how far is the dose likely to be modified by age or disease?

All sublimates or precipitates should be preserved in hermetically sealed glass tubes, to be used as evidence on the trial, duly labeled and carefully preserved as a part of the report.

The examiner should never make experiments on the suspected substance without repeating them on ingredients that are deemed analogous, and in which the quantity of poisonous matter is ascertained.

He should prepare all his tests before he begins his analysis, and have his order of procedure fully determined beforehand, and perform the experiments at one time. If the quantity of matter received is sufficient, subdivide it so that various tests may be applied to each portion. If, however, the quantity is quite small, before commencing his tests he should carefully consider the symptoms attendant upon the last sickness and the indications they present and form his opinion as to the poison most likely to have been used. Then he can at once apply the proper tests for *that* poison and determine the nature and quality of the substance.

Chemistry can discern most of the poisons and those not discernible by chemical methods can generally be discovered by other tests if the examination is made in time.

The examiner should not forget that some people think that a brass vessel is just as suitable for cooking purposes as a tinned one, and in the kitchen may sometimes be found the poisoner.

Grains and berries and the ligneous part of poisonous plants have been discovered by inspection of the contents of the alimentary canal.

That the use of an innocent substance during life may cause appearances of a suspicious nature on dissection is shown by the following incident:

A person just recovering from a severe illness, during convalescence took a gentle purgative, after the operation of which he suddenly died. Of course, the druggist was blamed for the death on account of his supposed carelessness. A post-mortem showed the stomach and oesophagus red, in some places livid and resembling gangrene. This was claimed to be sufficient evidence of poisoning, but a physician, who was a friend of the druggist, satisfied he was too careful to make a blunder such as this indicated, investigated the case and found that the deceased had for some time previous to his death been in the habit of using a strong infusion of red poppies. He administered a similar infusion to a dog, and on dissection found the same organs of exactly the same color as those of the deceased.

In cases where the poison cannot be identified by the symptoms, post-mortem lesions and chemical tests, the suspected material should be introduced into a living animal (a dog, cat, rabbit, guinea pig or mouse, and in the case of suspected strychnine poisoning, a frog) and its effect noted. Birds are not so well adapted for experiment. In this way it can be demonstrated whether there is poison in the material, with some of its pathological and physiological actions. This test has been successfully employed in a number of cases.

The material to be used in such cases is that vomited up or found in the stomach and bowels of the deceased. In making such experiments upon animals two things should be remembered and thus a hasty conclusion prevented. In the first place, disease may cause the secretions of the alimentary canal to be infected and thus to act poisonously upon the animal, although in fact no poison has been administered to the deceased; and in the second place, all the poison may have been expelled from the body, and then no poisonous effects will be produced on the animal.

Another fact of great importance is that a poison may be introduced into the human system through the body of an animal, without the latter being affected by it. Thus, a cow or a goat will feed upon stramonium with impunity, but their milk will act poisonously upon those who drink it. And where a family exhibited all the evidences of belladonna poisoning after eating a rabbit pie, it was shown that this was occasioned by the animal having previously eaten of the belladonna plant; whereby its flesh had become poisonous.¹¹

It is necessary, also, to remember that there has been discovered a certain class of bodies, to which Prof. Selim gave the name of ptomaines, resulting from the decay of organic substances, either vegetable or animal. The symptoms of poisoning produced by the eating of spoiled meat, decayed fish, cheese, sausages, mussels, ice cream and canned goods are due to the presence of ptomaines, which are the basic production of putrefaction. They are probably present to a greater or less extent in every organ submitted to the toxicologist for examination, and have and will doubtless furnish opportunity for the escape of criminals when strongly and pertinaciously urged as the probable cause of the results obtained by the chemical analysis claimed to show the presence of poison. To guard against the successful urging of such a claim, the chemist must first be sure to use only perfectly pure reagents, and then to be satisfied only with all the known tests for the poison supposed to be present, to some of which the ptomaines will not respond.

¹¹ Reese Medical Jur., p. 196.

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